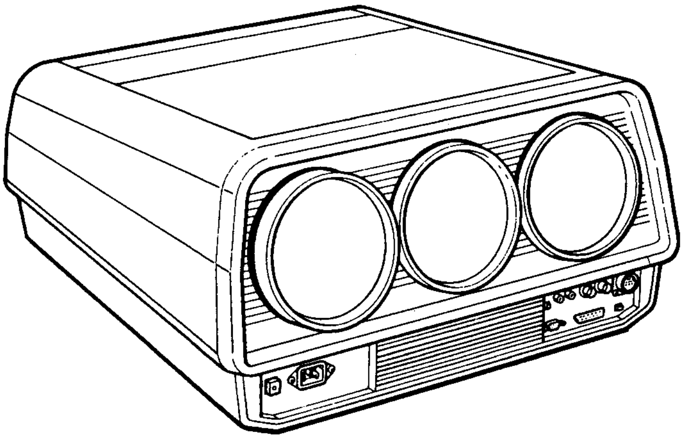
V03234

VPH-1031QM

SERVICE MANUAL

AEP Model

Chassis No. SCC-759C-A



MULTISCAN

SPECIFICATIONS

Optical

Projection system	3 picture tubes, 3 lenses, direct projection system
Picture tube	5.5-inch high-brightness monochrome tubes, with coolant sealed
Projection lens	High-performance hybrid lenses F 1.0/135 mm
Projected picture size	67—250 inches measured diagonally Factory-adjusted to 100 inches measured diagonally
Light output	300 lm

General

Color system	PAL, SECAM, NTSC and NTSC4.43 systems, switched automatically
Resolution	1100 TV lines (RGB inputs) 650 TV lines (video input)
RGB inputs	Character display capacity: 4050 characters at 24 kHz (5 × 7 dots, 90 letters × 45 lines) Graphic display capacity: 1024 × 500 dots Horizontal frequency: 15 kHz to 36 kHz Vertical frequency: 40 Hz to 150 Hz
Test signal	Cross-hair test pattern generator is incorporated.
Speaker	8 cm (3 1/8 inches) dia., 2 units, total 3 W
Inputs	**LINE** VIDEO IN: BNC connector Composite video input, 1 Vp-p ± 2 dB, sync negative, 75 ohms terminated AUDIO IN: phono jack 0.5 Vrms Impedance: more than 47 k ohms **RGB 1** RGB 1: D-sub 9-pin connector Digital signal (TTL level) See "Pin assignment". AUDIO IN: phono jack 0.5 Vrms Impedance: more than 47 k ohms **RGB 2** RGB 2: 21-pin connector See "Pin assignment".
Output	VIDEO OUT: BNC connector Composite video output, 1 Vp-p ± 2 dB, impedance 75 ohms, selected video output With the remote controller: video signal from the controller Without the remote controller: video signal from the VIDEO IN connector
TO VPR-722 connector	14-pin connector See "Pin assignment".
Power requirements	220—240 V AC, 50/60 Hz
Power consumption	195 W
Dimensions	Approx. 532 × 280 × 597 mm (w/h/d) (21 × 11 1/8 × 23 5/8 inches) with the brackets pushed down, incl. projecting parts and controls
Weight	Approx. 38 kg (83 lb 12 oz)
Accessories supplied	AC power cord (1) Spacer for 72" projection Label of the RGB MORE SELECT switch for the VPR-722 (1)

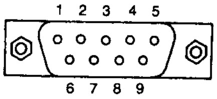
Design and specifications subject to change without notice.

OPTIONAL ACCESSORIES

Remote controller VPR-722
Projector pedestal SU-722
Projector suspension support PSS-722, PSS-10
Screen VPS-100F1 (100" flat)
VPS-72HG1 (72" curved)
VPS-100HG1 (100" curved)
Carrying case VLC-1040
CCQ cables

Signal assignment

RGB 1 connector
(D-sub 9-pin)



Digital signal (TTL level)

Pin No.	Signal assignment
1	Ground
2	Ground
3	Red input
4	Green input
5	Blue input
6	Intensity input
7	No connection
8	H. sync or composite sync input (positive/negative)
9	V. sync input (positive/negative)

— Continued on next page —

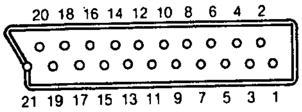
MICROFILM

COLOR VIDEO PROJECTOR

SONY®

MON

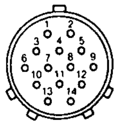
RGB 2 connector (21-pin)


20 18 16 14 12 10 8 6 4 2
21 19 17 15 13 11 9 7 5 3 1

Pin No.	Signal	Signal level
1	Audio output B (right)	Standard level: 0.5 Vrms Output impedance: Less than 1 k ohm*
2	Audio input B (right)	Standard level: 0.5 Vrms Input impedance: More than 10 k ohms*
3	Audio output A (left)	Standard level: 0.5 Vrms Output impedance: Less than 1 k ohm*
4	Ground (audio)	
5	Ground (blue)	
6	Audio input A (left)	Standard level: 0.5 Vrms Input impedance: More than 10 k ohms*
7	Blue input	0.7 V ±2 dB, 75 ohms, positive
8	Function select (AV control)	High state (9.5—12 V): Peri mode Low state (0—2 V): TV mode Input impedance: More than 10 k ohms Input capacitance: Less than 2 nF
9	Ground (green)	
10	Open	
11	Green/Green with sync input	Green signal: 0.7 V ±2 dB; 75 ohms, positive Green with sync signal: 1 V ±2 dB, 75 ohms, positive
12	Open	
13	Ground (red)	
14	Ground (blanking)	
15	Red input	(Same as Pin 7)
16	Blanking input (Ys signal)	High state (1—3 V) Low state (0—0.4 V) Input impedance: 75 ohms
17	Ground (video output)	
18	Ground (video input)	
19	Video output	1 V ±2 dB, 75 ohms, positive Sync: 0.3 V (−3, ±10 dB)
20	Video input	1 V ±2 dB, 75 ohms, positive Sync: 0.3 V (−3, ±10 dB)
21	Common ground (plug, shield)	

*at 20 Hz—20 kHz

TO VPR-722 connector (14-pin)

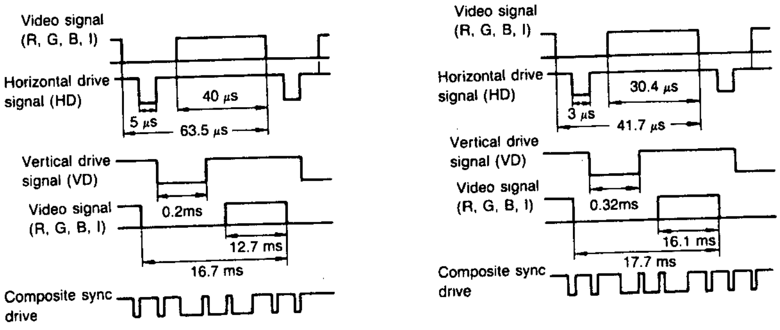

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Pin No.	Signal	Pin No.	Signal
1	Ground	8	Input select
2	+28V⎓60mA	9	Audio (incl. volume control)
3	Hue 1	10	Brightness
4	Hue 2	11	Sharpness
5	Hue 3	12	Color
6	Video	13	Picture
7	Ground (video)	14	Power ON: 12V OFF: 0V

Timing chart

15.75 kHz scanning frequency

24 kHz scanning frequency


Video signal (R, G, B, I)
Horizontal drive signal (HD)
40 μs
5 μs
63.5 μs
Vertical drive signal (VD)
Video signal (R, G, B, I)
0.2ms
12.7 ms
16.7 ms
Composite sync drive
Video signal (R, G, B, I)
Horizontal drive signal (HD)
30.4 μs
3 μs
41.7 μs
Vertical drive signal (VD)
Video signal (R, G, B, I)
0.32ms
16.1 ms
17.7 ms
Composite sync drive

Note

If the input signals are not the recommended ones, the dimensions of the character display area may change or the picture may be decentered due to the timing of the connected microcomputer. This is not a fault of the monitor.

WARNING

To prevent fire or shock hazard, do not expose the set to rain or moisture.

Dangerously high voltages are present inside the set. Do not open the cabinet. Refer servicing to qualified personnel only.

NOTICE FOR THE CUSTOMERS IN THE UNITED KINGDOM

WARNING
THIS APPARATUS MUST BE EARTHED

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Green-and-yellow	Earth
Blue	Neutral
Brown	Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured green or green-and-yellow. The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black. The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

TABLE OF CONTENTS

Section *Title* *Page*

1. GENERAL

1-1. Location and Function of Controls 4
1-2. System Connections 6
1-3. Position and Registration Adjustments ... 9
1-4. Projecting 10
1-5. Precautions 12
1-6. Features 12
1-7. Installation Diagrams 13
1-8. Notes on Installation 18
1-9. Polarity Change 20
1-10. Lens Focus Adjustment 21
1-11. Registration Adjustment 22
1-12. Conversion for 72" (67") or 200" (150–250") projection 24

2. DISASSEMBLY

2-1. Lens Removal 26
2-2. DC Block, High-Voltage Removal 26
2-3. Picture Tube Removal 27
2-4. Power Block and QA Board Removal 27
2-5. EA Board Removal 28

3. CIRCUIT DESCRIPTIONS

3-1. H.V REG 29
3-2. Protector Circuit 29
3-3. Beam Current Protector 29

4. SET-UP ADJUSTMENTS

4-1. Basic Adjustments 30
4-2. Green Focus Adjustment 30
4-3. Red Focus Adjustment 30
4-4. Blue Focus Adjustment 30
4-5. Green Picture Adjustment 30
4-6. BLK Adjustment 31
4-7. RED DY Adjustment 32
4-8. TILT Adjustment 32
4-9. G-R H. Registration Adjustment 32
4-10. G-R TILT Adjustment 33
4-11. BLUE DY Adjustment 33
4-12. G-B V. Registration Adjustment 33
4-13. G-B H. Registration Adjustment 33
4-14. G-B TILT Adjustment 34
4-15. V. Keys Select SW Operation Check 34
4-16. White Balance Adjustment 34

5. SAFETY RELATED ADJUSTMENTS

5-1. EA Board Adjustments 35
5-2. EA Board Adjustments (when a high tension meter is not available) 37
5-3. EA, DA and DB Boards Adjustments 39
5-4. EA, DA and DB Boards Adjustments (when a high tension meter is not available) 41

6. CIRCUIT ADJUSTMENTS

6-1. BA and BE Boards Adjustments 43
6-2. DA Board Adjustments 46

7. DIAGRAMS

7-1. Circuit Boards Location 49
7-2. Quick Reference 50
7-3. Block Diagrams 51
7-4. Frame Schematic Diagram 71
7-5. Schematic Diagrams 75
7-6. Printed Wiring Boards 79
7-7. Waveforms 131
7-8. Semiconductors 143

8. EXPLODED VIEWS

8-1. Lens 145
8-2. DB Board 146
8-3. DA Board 147
8-4. Base Assy 148
9. ELECTRICAL PARTS LIST 149

WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

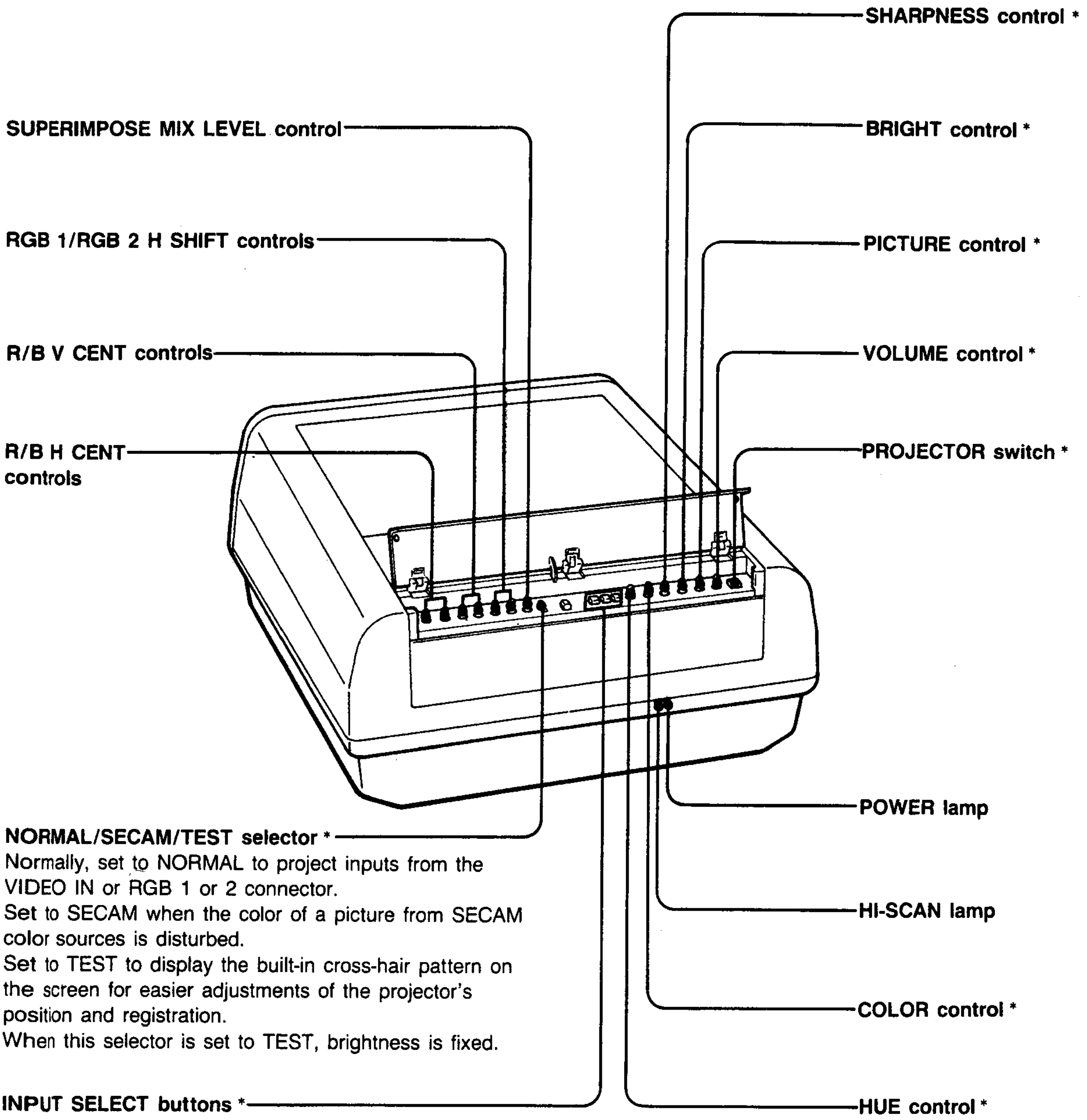
COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SECTION 1

GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS

Control panel


SHARPNESS control *
SUPERIMPOSE MIX LEVEL control
BRIGHT control *
RGB 1/RGB 2 H SHIFT controls
PICTURE control *
R/B V CENT controls
VOLUME control *
R/B H CENT controls
PROJECTOR switch *
POWER lamp
NORMAL/SECAM/TEST selector *
HI-SCAN lamp
COLOR control *
INPUT SELECT buttons *
HUE control *

NORMAL/SECAM/TEST selector *

Normally, set to NORMAL to project inputs from the VIDEO IN or RGB 1 or 2 connector.

Set to SECAM when the color of a picture from SECAM color sources is disturbed.

Set to TEST to display the built-in cross-hair pattern on the screen for easier adjustments of the projector's position and registration.

When this selector is set to TEST, brightness is fixed.

INPUT SELECT buttons *

Press to select the program source to be projected.

LINE: For inputs from the TO VPR-722 connenctor or the VIDEO IN/AUDIO IN connectors.

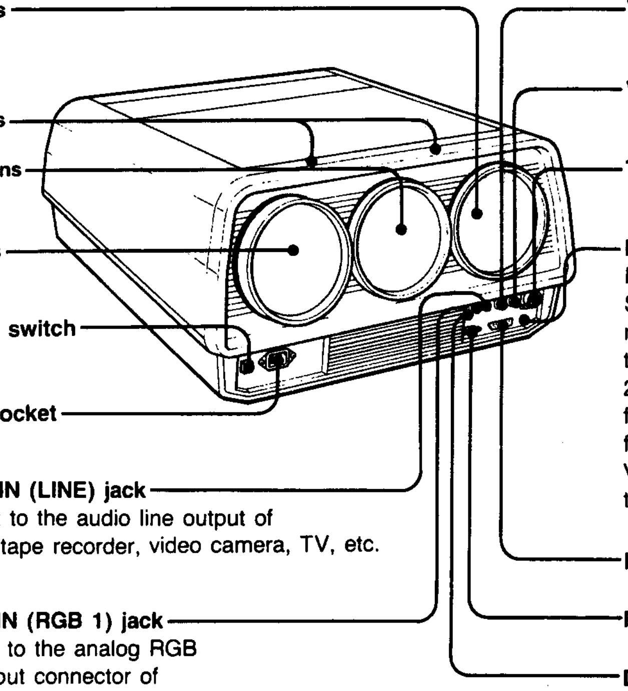
RGB 1: For inputs from the RGB 1 connector and AUDIO IN (RGB 1) jack.

RGB 2: For inputs from the RGB 2 connector.

Notes

- SHARPNESS, COLOR and HUE controls do not function for RGB inputs.
- Controls and buttons with * do not function when the VPR-722 remote controller is connected to the TO VPR-722 connector. The same controls on the VPR-722 are operative.

Connector panel



Blue lens

Speakers

Green lens

Red lens

POWER switch

AC IN socket

AUDIO IN (LINE) jack
Connect to the audio line output of a video tape recorder, video camera, TV, etc.

AUDIO IN (RGB 1) jack
Connect to the analog RGB multioutput connector of a microcomputer.

VIDEO IN (LINE) connector

VIDEO OUT connector

TO VPR-722 connector

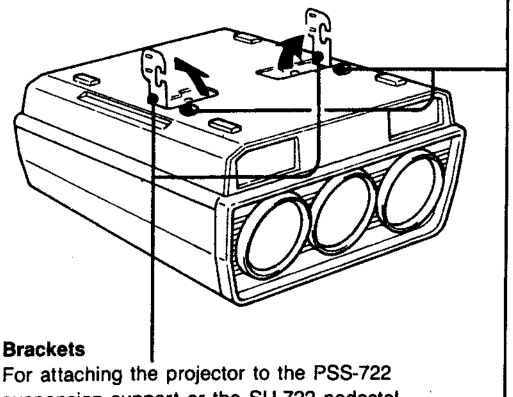
NORMAL/SUPER selector
Normally, set to NORMAL.
Set to SUPER when superimposing the data from the microcomputer connected to the RGB 2 connector, on the picture from No. 20 (video input) pin of the RGB 2 connector when the function select (AV control) signal fed through No. 8 pin is in the high state or no signal is fed through No. 8 pin, or on the picture from the TO VPR-722 or VIDEO IN connector when the signal fed through No. 8 pin is in the low state.

RGB 2 input conector

RGB 1 input connector

DIGITAL selector
Normally set to 2.
When the microcomputer provided with the intensity output is connected, set to 1 for 16-color display.

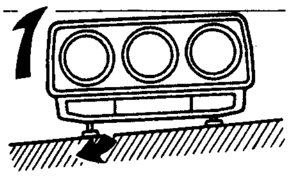
Bottom



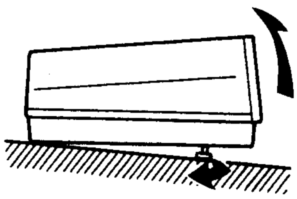
Brackets
For attaching the projector to the PSS-722 suspension support or the SU-722 pedestal.

Adjustable feet
The horizontal balance and angle of the projector can be adjusted with these feet.
The feet are factory-adjusted to the shortest length for a flat base.

Turn either foot to obtain horizontal balance.



Turn both feet to adjust the angle.

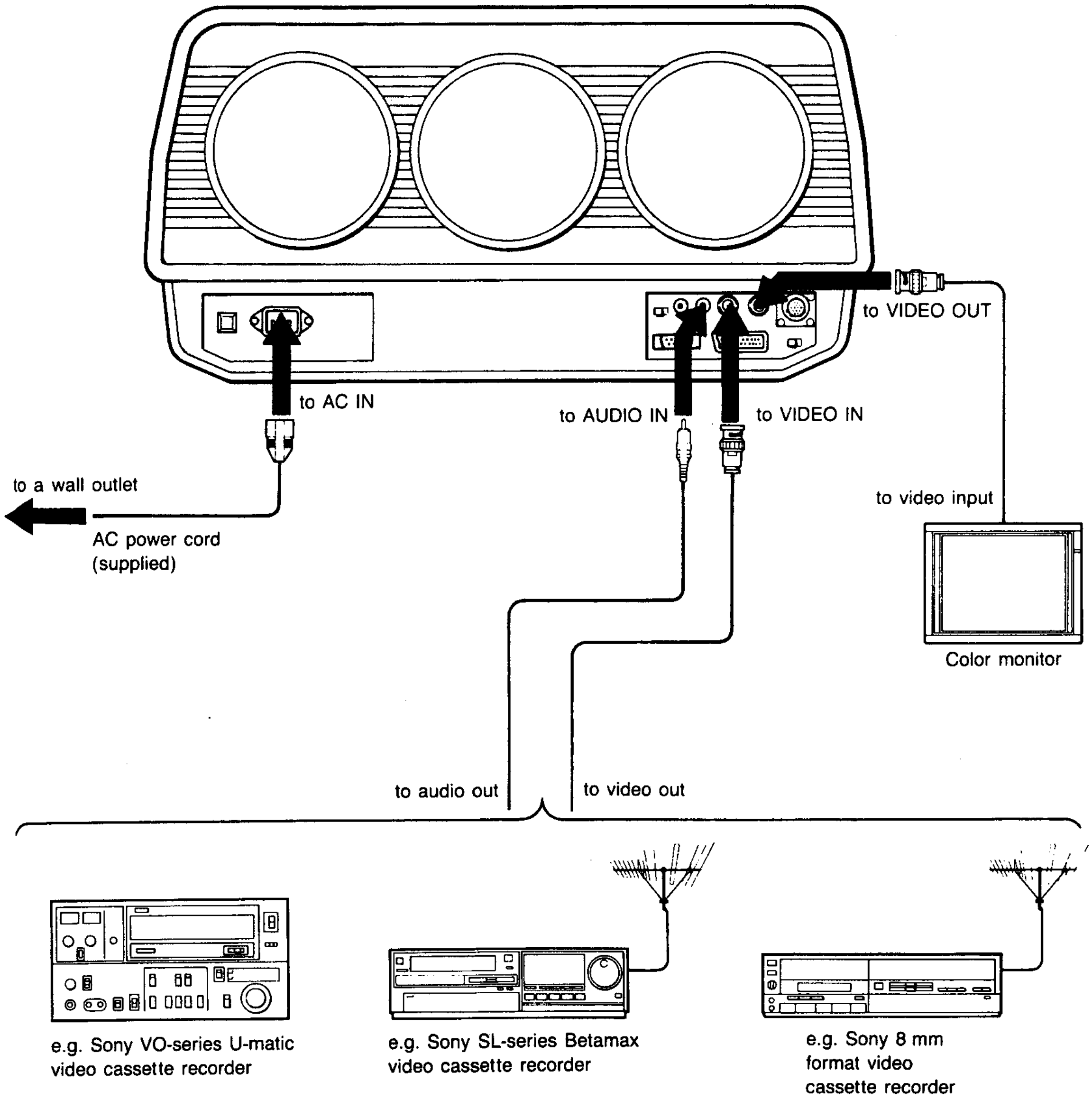


1-2. SYSTEM CONNECTIONS

Connecting notes

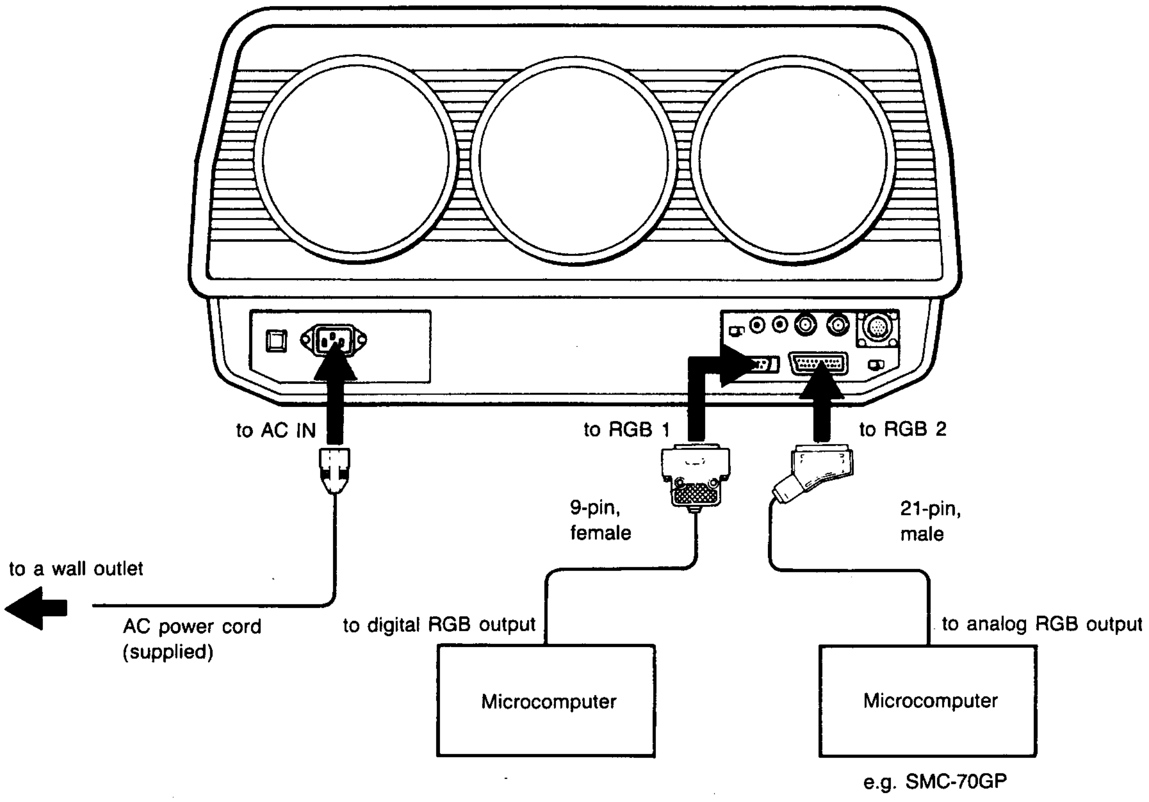
- First make sure that the power to each piece of equipment is turned off.
- The cable connectors should be fully inserted into the jacks. A loose connection may cause hum and noise.
- To disconnect the cable, pull it out by grasping the plug. Never pull the cable itself.
- Use suitable connecting cables according to the equipment to be connected.
- For connection to the VIDEO IN and TO VPR-722 connectors, the connecting cable may be extended to max. 50 m (164 feet ½ inch). If the connecting cable is too long (longer than 50 m), picture quality may be impaired somewhat.
- Read the instruction manual of the equipment to be connected.

WITHOUT USING THE REMOTE CONTROLLER


to VIDEO OUT
to AC IN
to AUDIO IN
to VIDEO IN
to a wall outlet
AC power cord
(supplied)
to video input
Color monitor
to audio out
to video out
e.g. Sony VO-series U-matic video cassette recorder
e.g. Sony SL-series Betamax video cassette recorder
e.g. Sony 8 mm format video cassette recorder

To project the picture input from the VIDEO IN connector, press the LINE INPUT SELECT button.

CONNECTING A MICROCOMPUTER

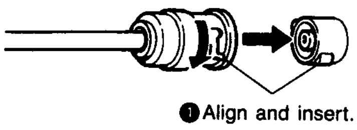

to AC IN
to RGB 1
to RGB 2
9-pin, female
21-pin, male
to a wall outlet
AC power cord (supplied)
to digital RGB output
to analog RGB output
Microcomputer
Microcomputer
e.g. SMC-70GP

- To project the picture input from the RGB 1 connector or RGB 2 connector, press the RGB 1 or RGB 2 INPUT SELECT button respectively.
  Adjust the horizontal position of the picture with the RGB 1/RGB 2 H SHIFT controls, if necessary.
- When the microcomputer connected to the RGB 1 connector is provided with the intensity output, set the DIGITAL selector to 1 for 16-color display.
- To perform superimoposing of the data from the microcomputer connected to the RGB 2 connector, set the NORMAL/SUPER selector to SUPER. (The signal from the microcomputer should be processed for superimposition.) Adjust the contrast of the superimposed picture with the SUPERIMPOSE MIX LEVEL control, if necessary.

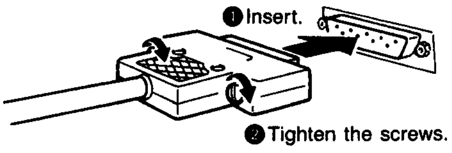
- If your microcomputer is equipped with a composite video output, connect it to the VIDEO IN (LINE) connector on the projector.
- If necessary, connect an audio source to the RGB AUDIO IN jack.

Note
Do not leave a still picture from a microcomputer or video disc player projected for more than one hour.

BNC connector


❷Turn clockwise.
❶Align and insert.

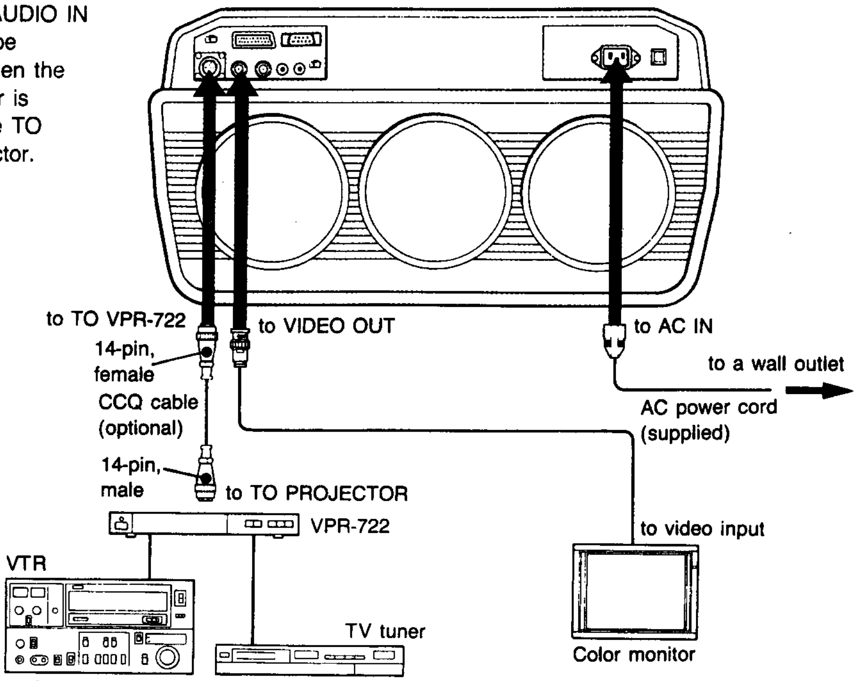
9-pin connector


❶Insert.
❷Tighten the screws.

USING THE REMOTE CONTROLLER

Use the optional VPR-722 remote controller when the projector is installed on the ceiling or at a distance from your seat. Power ON/OFF, program selection and picture adjustments can be remotely controlled.

The VIDEO IN/AUDIO IN connectors will be disconnected when the remote controller is connected to the TO VPR-722 connector.

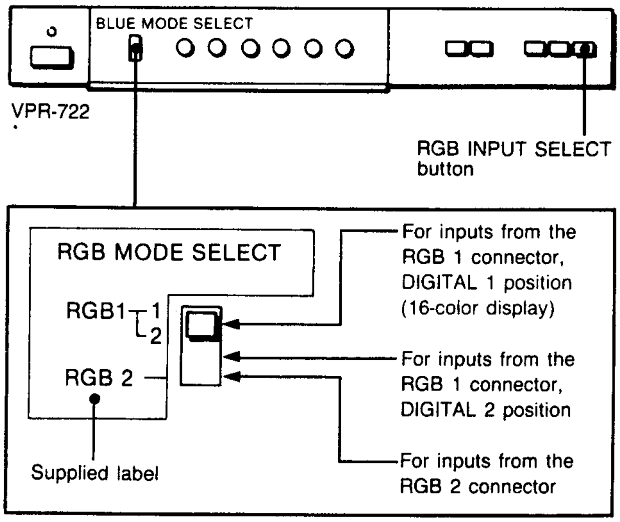

to TO VPR-722
14-pin, female
CCQ cable (optional)
14-pin, male
to TO PROJECTOR
to VIDEO OUT
to AC IN
to a wall outlet
AC power cord (supplied)
VPR-722
VTR
TV tuner
to video input
Color monitor

For detail on the connections, see the instruction manual of the VPR-722.

When the remote controller is connected, the PROJECTOR switch, INPUT SELECT buttons and controls for picture adjustments on this unit do not function. Keep the POWER switch on the projector ON and operate these functions with the remote controller.

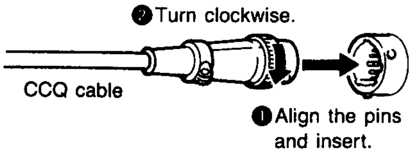
Note on the BLUE MODE SELECT switch
When the VPR-722 is connected to this unit, the BLUE MODE SELECT switch on the VPR-722 functions as the RGB MODE SELECT switch. Attach the label supplied with this unit to the BLUE MODE SELECT switch.

To project the signals connected to the RGB 1 or RGB 2 connector, first press the RGB INPUT SELECT button and set the RGB MODE SELECT switch as follows.


BLUE MODE SELECT
VPR-722
RGB INPUT SELECT button
RGB MODE SELECT
RGB1 1
2
RGB 2
Supplied label
For inputs from the RGB 1 connector, DIGITAL 1 position (16-color display)
For inputs from the RGB 1 connector, DIGITAL 2 position
For inputs from the RGB 2 connector

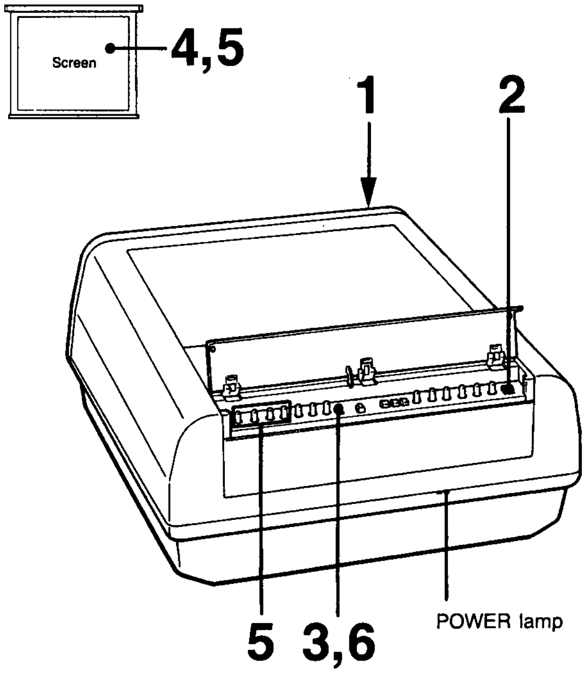
Notes
When the remote controller is connected to the TO VPR-722 connector:
- the VIDEO IN/AUDIO IN (LINE) connectors are disconnected automatically.
- the PROJECTOR switch, INPUT SELECT buttons, RGB BLUE MODE SELECT switch and the controls for picture and sound adjustments (except H SHIFT and V HOLD) do not function.

14-pin connector


❷Turn clockwise.
CCQ cable
❶Align the pins and insert.

1-3. POSITION AND REGISTRATION ADJUSTMENTS

When the projector is installed on a desk or on the floor using the pedestal, it can be easily moved but it may be necessary to readjust the registration.

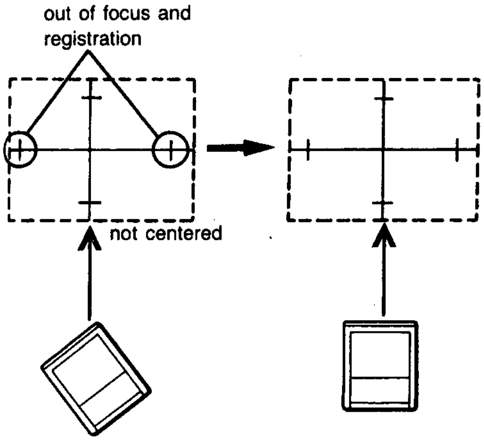

Screen
4,5
1
2
5
3,6
POWER lamp

1 **Depress the POWER switch (ON).**

2 **Depress the PROJECTOR switch (ON).**
When the remote controller is used, turn the PROJECTOR switch on the remote controller on. The green POWER lamp will light.

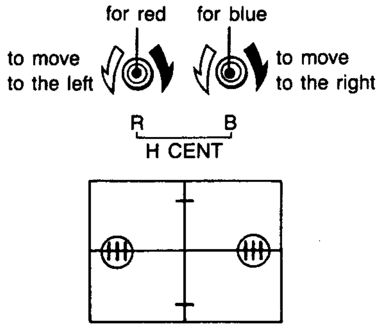
3 **Set the NORMAL/SECAM/TEST selector to TEST.**
The built-in cross-hair pattern will be displayed.

4 **Check the focus and centering.**
If the test pattern is not centered and focused on the screen, move the projector slightly so that the pattern is displayed clearly.


out of focus and registration
not centered

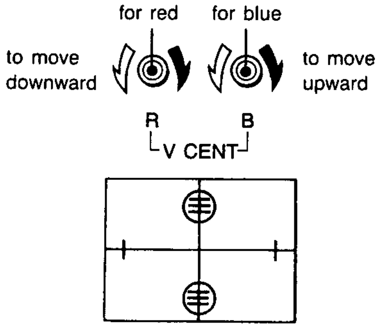
5 **Check the convergence of red, green and blue.**
If the red and blue lines do not converge with the green line, adjust the R/B H CENT and R/B V CENT controls so that the three lines converge and the pattern is seen as white.

To move the red and blue vertical lines


for red
for blue
to move to the left
to move to the right
R
B
H CENT

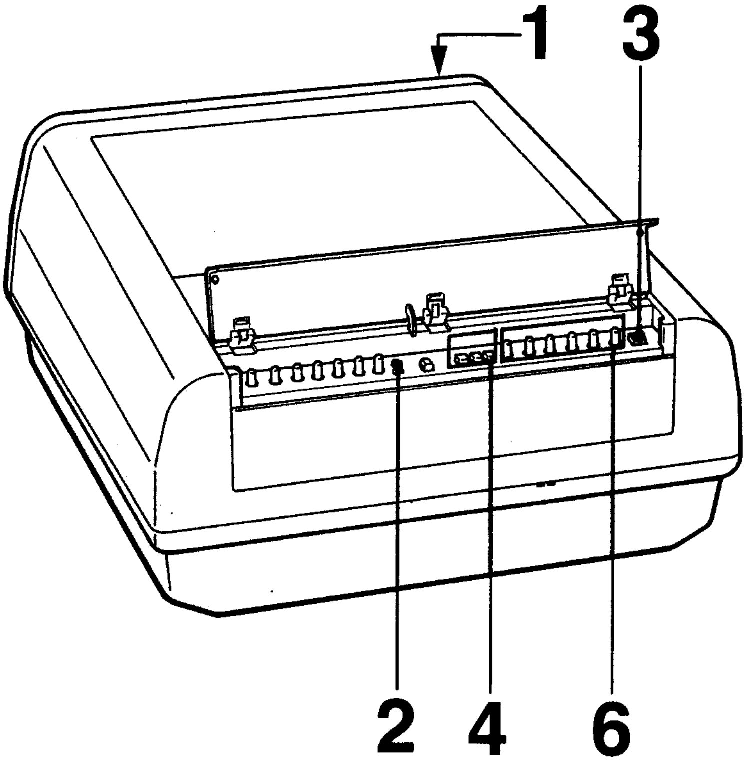
For the appropriate distance between the projector and the screen, see pages 13 to 17.

To move the red and blue horizontal lines


for red
for blue
to move downward
to move upward
R
B
V CENT

6 **After the adjustment is complete, set the NORMAL/SECAM/TEST selector to NORMAL.**

1-4. PROJECTING



OPERATION

1 **Depress the POWER switch (ON).**

2 **Make sure that the NORMAL/SECAM/TEST selector is set to NORMAL.**

3 **Depress the PROJECTOR switch (ON).**

4 **Select the program to be projected by pressing the appropriate INPUT SELECT button.**

5 **Turn on the connected equipment.**
The picture will be projected on the screen and the sound will be heard from the speaker.

6 **Adjust the picture and sound to your preference. See below.**

To turn off the projector
Press the PROJECTOR switch again (OFF).

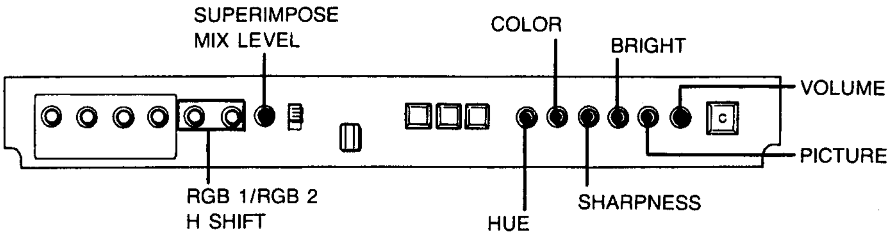
To turn off the power
Press the POWER switch (OFF).

OPERATION USING THE REMOTE CONTROLLER

When the optional Sony VPR-722 remote controller is connected to the TO VPR-722 connector, keep the POWER switch on the projector at ON and perform steps 3, 4 and 6 above on the controller. The controls on the projector do not function.

Note
R/B V CENT, R/B H CENT, H SHIFT and SUPERIMPOSE MIX LEVEL control adjustments cannot be operated with the controller.

PICTURE AND SOUND ADJUSTMENTS



VOLUME	Turn toward MAX to increase volume, and toward MIN to decrease it.
PICTURE	Turn clockwise to increase picture contrast, color intensity and brightness in the proper ratio, and counterclockwise to decrease them.
BRIGHT	Turn clockwise for more brightness, and counterclockwise for less.
SHARPNESS	Turn clockwise for sharp picture, and counterclockwise for soft picture.
COLOR	Turn clockwise for more color intensity, and counterclockwise for less.

HUE	(Effective only for a program of the NTSC or NTSC4.43 color system) Turn clockwise to make the skin tones greenish, and counterclockwise to make them purplish.
RGB1/RGB2 H SHIFT (horizontal shift) controls	Adjust the horizontal position of the picture input from the RGB 1 connector and RGB 2 connector, if necessary. The RGB 2 H SHIFT control does not function when the NORMAL/SUPER selector is set to SUPER.
SUPERIMPOSE MIX LEVEL control	Adjusts the contrast of the superimposed picture connected to the RGB 2 connector.

1-5. PRECAUTIONS

On safety

- Check that the operating voltage of your unit is identical with the voltage of your local power supply.
  If voltage adaptation is required, consult your Sony dealer or qualified personnel.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet or set the POWER switch to OFF if it is not to be used for several days.
- To disconnect the cord, pull it out by the plug. Never pull the cord itself.

On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.
  Be aware that room heat rises to the ceiling; check that temperature near the installation location is not excessive.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust or humidity, mechanical vibration or shock.

On illumination

- To obtain a clear picture, the screen should not be exposed to illumination or sunlight directly from the front.
- Ceiling mounted spot lighting is recommended.
  Use a construction over light-scattering illumination such as fluorescent lamps.
- Cover the windows that face the screen with opaque draperies.
- It is desirable to install the projector in a room whose floor and walls are not of light-reflecting material.
  If the floor and walls are of reflecting material, it would be desirable to change to a dark carpet and wall paper.

On cleaning

- To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution. Never use strong solvents, such as thinner or benzine, or abrasive cleansers, since these will damage the cabinet.
- Avoid touching the lens. To remove dust on the lens, use a soft dry cloth. Do not use a damp cloth, detergent solution, or thinner.

On repacking

Save the original shipping carton and packing material; they will come in handy if you ever have to ship your unit. For maximum protection, repack your unit as it was originally packed at the factory.

1-6. FEATURES

Multiscan projector

The projector accepts 15 kHz ~ 36 kHz horizontal scanning frequencies and 40 Hz ~ 150 Hz vertical scanning frequencies, and detects the frequencies automatically. In addition to VCRs, video cameras and TVs having the standard scanning frequency of 15.75 kHz, high-resolution picture from microcomputers can be projected.

Fine-detailed picture-resolution — 1100 lines

Newly-developed picture tubes incorporating a large-neck gun, a new phosphor screen and a colored coolant filter and hybrid F 1.0 lenses provide high resolution and brightness.

Sync on Green

When analog RGB signals are input through the RGB 2 connector, if a sync signal is intput through the green input together with the green signal, this sync signal is used to control the picture.
If, however, a sync signal is input through the video input, this sync signal is used.
The following table indicates which sync signal has priority:

Signals input through the video input	Signals input through the green input	Sync signal with priority
Sync signal included	Sync signal included	The one input through the video input
Sync signal included	Sync signal not included	
Sync signal not included	Sync signal included	The one input through the green input

Various installatiion possibilities

The projector is designed to be installed on desk, floor or ceiling and can be used with either a flat screen or curved screen.

Portable single unit

The power supply and control sections are incorporated in one compact, easy-to-transport unit.

Illuminated control panel

When the panel cover is open, the control panel where the user controls are located is illuminated for easy operation in dim or dark places.

Other features

- PAL, SECAM, NTSC or $\text{NTSC}_{4.43}$* color system is selected automatically.
- Both digital and analog RGB connectors allow connection of microcomputers, video cameras or special adaptors for future videotex/teletext.
- Digital RGB selector allows 16-color display.

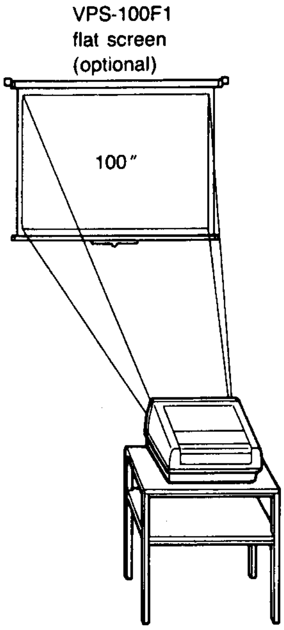
* A signal of $\text{NTSC}_{4.43}$ system is obtained by playing back NTSC-recorded video tapes with a video tape recorder/player specially designed for use with this system.

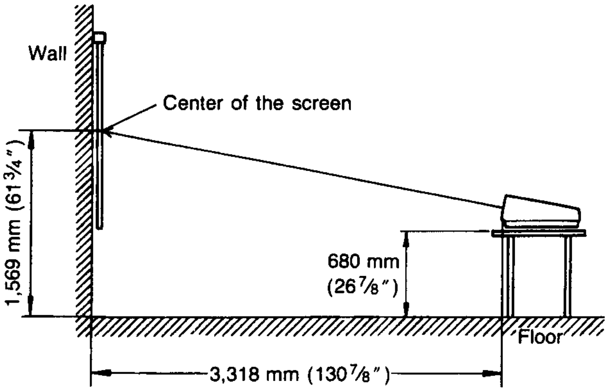
1-7. INSTALLATION DIAGRAMS

For the same type of installation in another place, no readjustment is required, although the projector should be placed in the proper position.

FOR 100″ PROJECTION

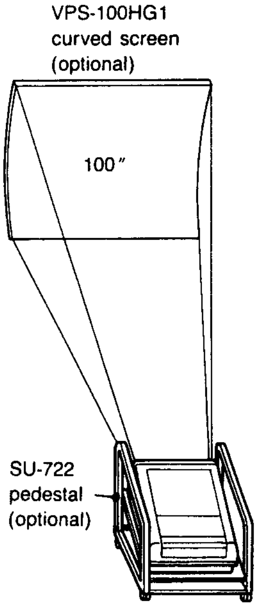
Desk

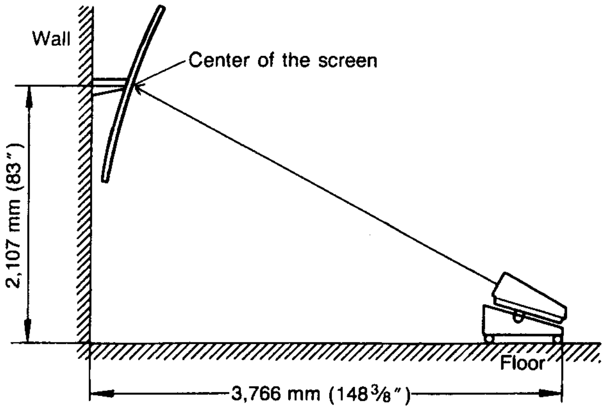

VPS-100F1
flat screen
(optional)
100″


Wall
Center of the screen
1,569 mm (61¾″)
680 mm
(26⅞″)
Floor
3,318 mm (130⅞″)

Tolerance in length: ±1%

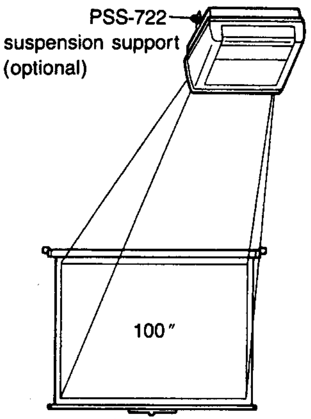
Floor


VPS-100HG1
curved screen
(optional)
100″
SU-722
pedestal
(optional)

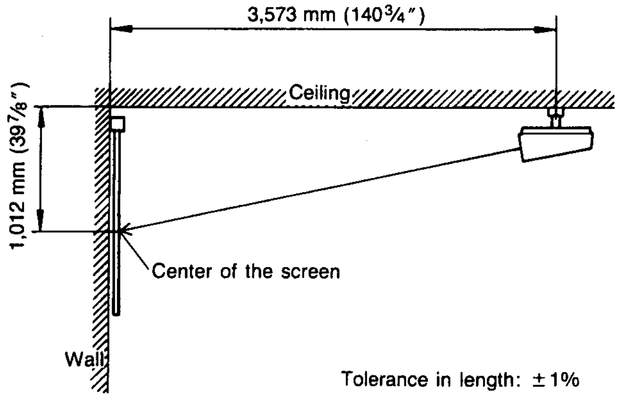

Wall
Center of the screen
2,107 mm (83″)
Floor
3,766 mm (148⅜″)

Tolerance in length: ±1%

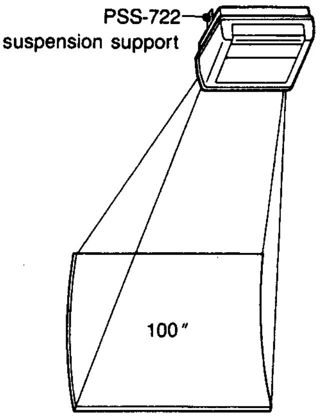
Ceiling


PSS-722
suspension support
(optional)
100″

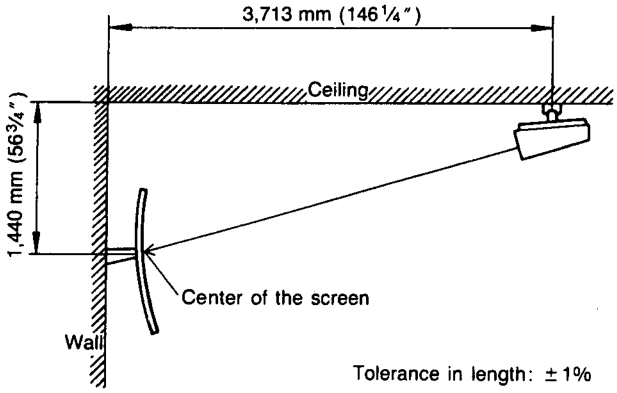
VPS-100F1
flat screen


3,573 mm (140¾″)
Ceiling
1,012 mm (39⅞″)
Center of the screen
Wall

Tolerance in length: ±1%

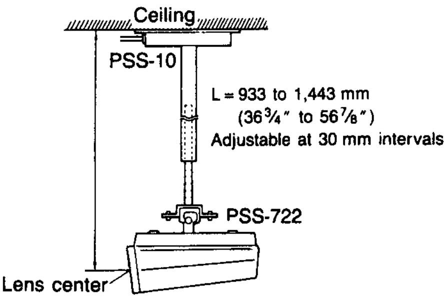

PSS-722
suspension support
100″

VPS-100HG1
curved screen


3,713 mm (146¼″)
Ceiling
1,440 mm (56¾″)
Center of the screen
Wall

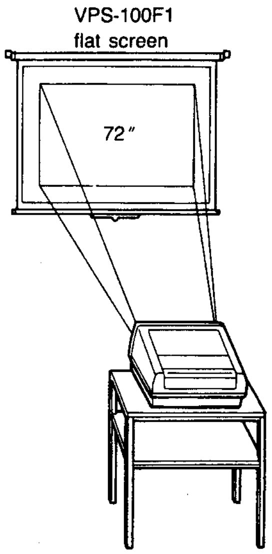
Tolerance in length: ±1%

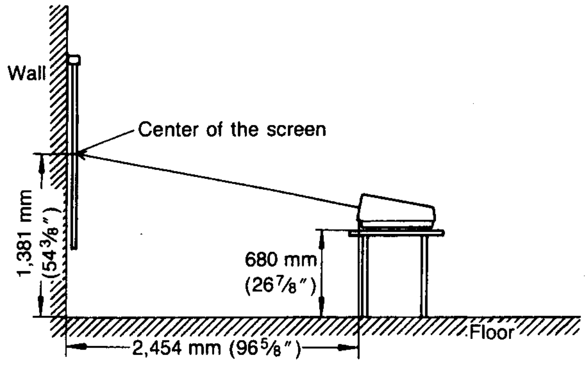
To adjust the distance between the ceiling and the projector, use the optional PSS-10 projector suspension support in combination with the PSS-722.


Ceiling
PSS-10
L = 933 to 1,443 mm
(36¾″ to 56⅞″)
Adjustable at 30 mm intervals
PSS-722
Lens center

FOR 72″ PROJECTION

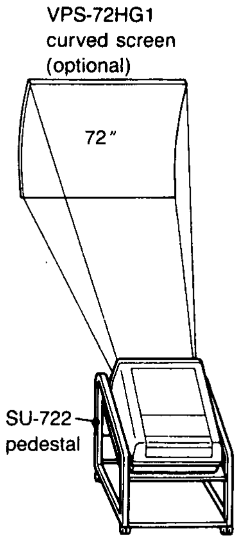
Desk

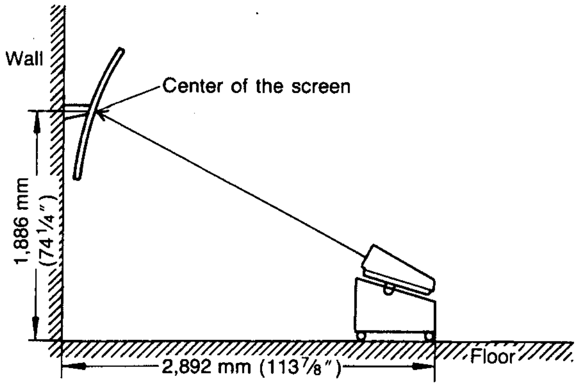

VPS-100F1
flat screen
72″


Wall
Center of the screen
1,381 mm
(54⅜″)
680 mm
(26⅞″)
2,454 mm (96⅝″)
Floor

Tolerance in length: ±1%

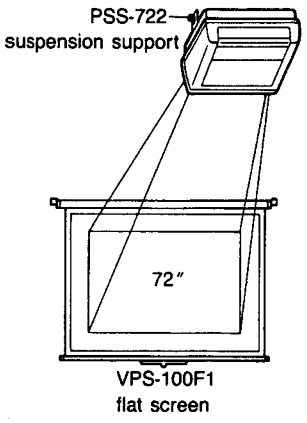
Floor

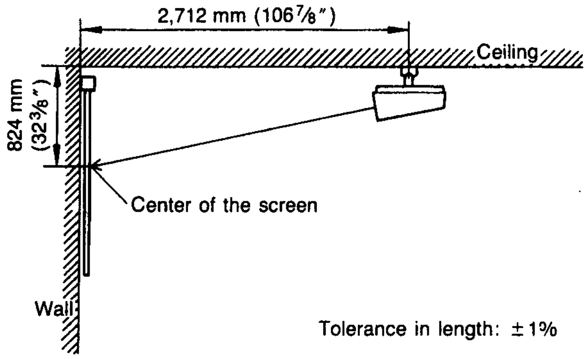

VPS-72HG1
curved screen
(optional)
72″
SU-722
pedestal


Wall
Center of the screen
1,886 mm
(74¼″)
2,892 mm (113⅞″)
Floor

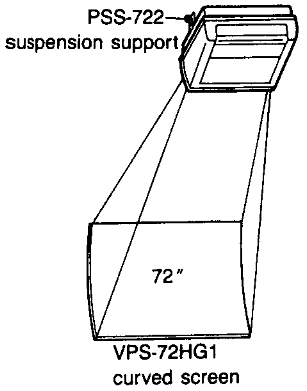
Tolerance in length: ±1%

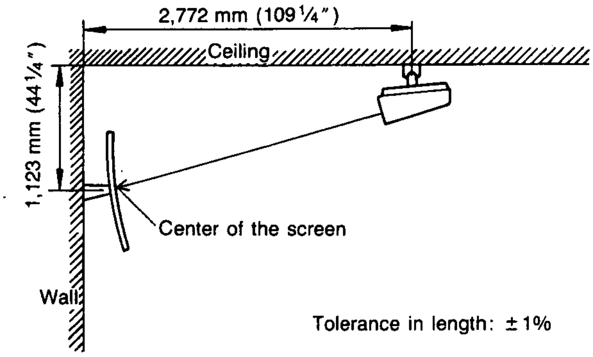
Ceiling


PSS-722
suspension support
72″
VPS-100F1
flat screen


2,712 mm (106⅞″)
Ceiling
824 mm
(32⅜″)
Center of the screen
Wall

Tolerance in length: ±1%


PSS-722
suspension support
72″
VPS-72HG1
curved screen


2,772 mm (109¼″)
Ceiling
1,123 mm (44¼″)
Center of the screen
Wall

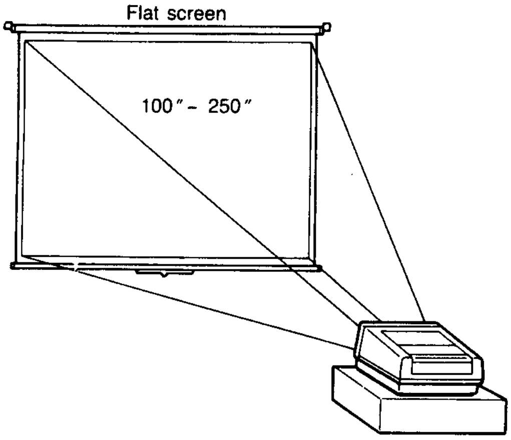
Tolerance in length: ±1%

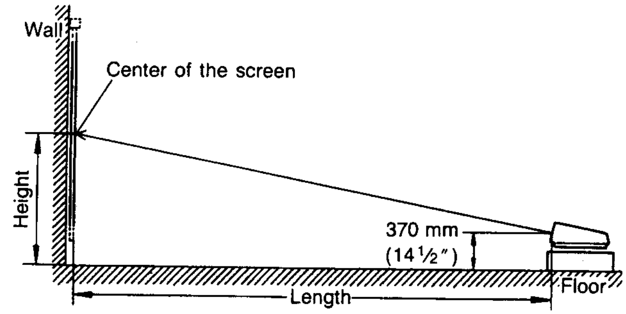
To transport the projector, use the VLC-1040 carrying case (optional).

FOR 100″- 250″ PROJECTION

Decide the length and height according to the size of the screen to be used.
For a screen not described in the tables, set the length approximately 1.6 times screen width.

Floor

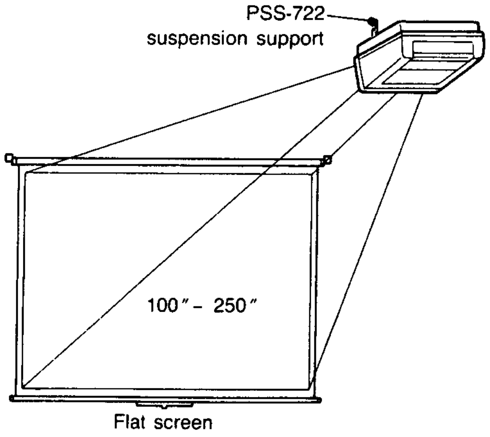

Flat screen
100″- 250″

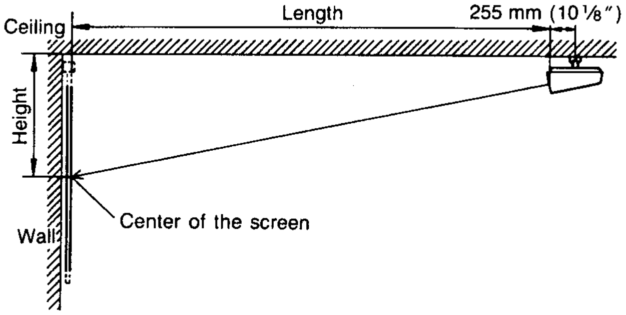

Wall
Center of the screen
Height
370 mm
(14½″)
Floor
Length

Screen size	150 inches	200 inches	250 inches
Length mm	4850 (191″)	6410 (252½″)	7960 (313½″)
Height mm	1410 (55½″)	1740 (68½″)	2080 (82″)

Tolerance in length: ±1%

Ceiling


PSS-722
suspension support
100″- 250″
Flat screen


Ceiling
Length
255 mm (10⅛″)
Height
Center of the screen
Wall

Screen size	150 inches	200 inches	250 inches
Length mm	4850 (191″)	6410 (252½″)	7960 (313½″)
Height mm	1350 (53¼″)	1680 (66¼″)	2020 (79½″)

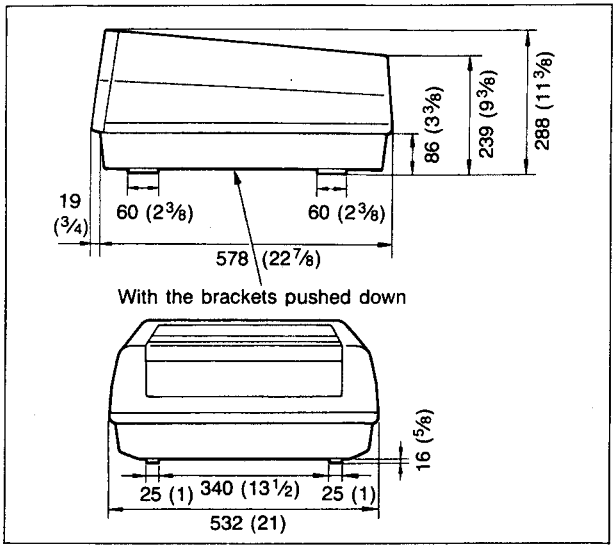
Tolerance in length: ±1%

To use 150″ to 250″ screens, the projector should be converted for 200″ projection. For conversion, consult the qualified Sony personnel.

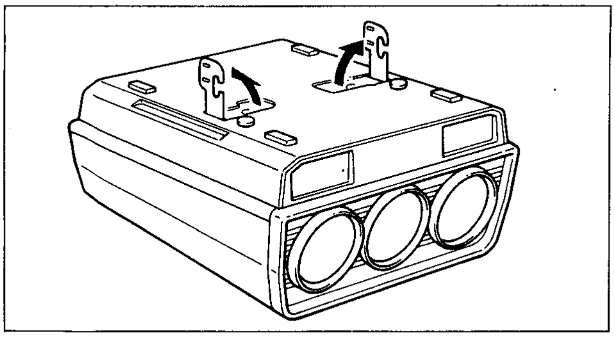
1-8. NOTES ON INSTALLATION

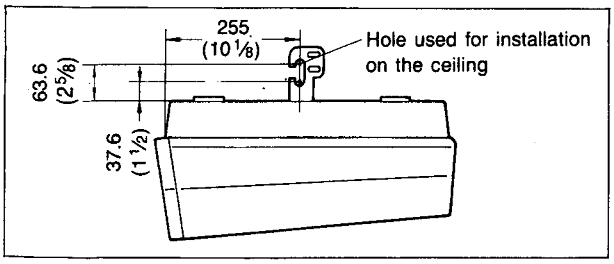
PROJECTOR'S DIMENSIONS

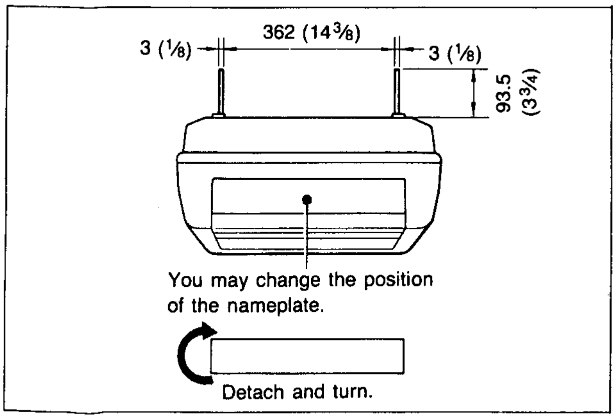
Unit: mm (inches)


86 (3⅜)
239 (9⅜)
288 (11⅜)
19 (¾)
60 (2⅜)
60 (2⅜)
578 (22⅞)
With the brackets pushed down
16 (⅝)
25 (1)
340 (13½)
25 (1)
532 (21)

Raise the brackets when installing the projector on the ceiling or floor.

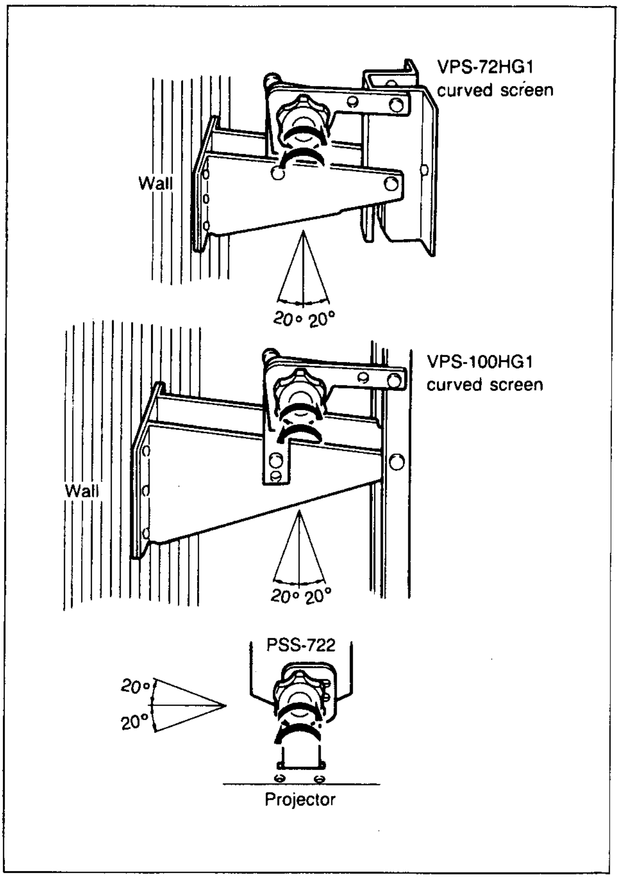



255 (10⅛)
Hole used for installation on the ceiling
63.6 (2⅝)
37.6 (1½)

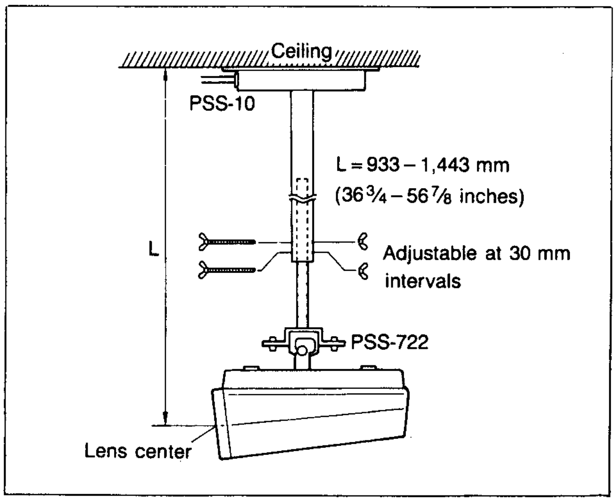

3 (⅛)
362 (14⅜)
3 (⅛)
93.5 (3¾)
You may change the position of the nameplate.
Detach and turn.

TO ADJUST THE ANGLE OF THE SCREEN/ PROJECTOR

Loosen the knobs, adjust the angle, then tighten the knobs down firmly.


VPS-72HG1 curved screen
Wall
20° 20°
VPS-100HG1 curved screen
Wall
20° 20°
PSS-722
20°
20°
Projector

When the PSS-10 projector suspension support (optional) is used in combination with the PSS-722
The PSS-10 allows you to adjust the distance between the ceiling and the projector.

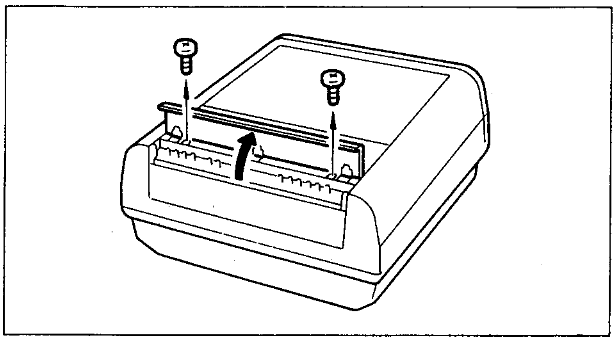

Ceiling
PSS-10
L = 933 – 1,443 mm (36¾ – 56⅞ inches)
L
Adjustable at 30 mm intervals
PSS-722
Lens center

TO OPEN THE TOP PANEL

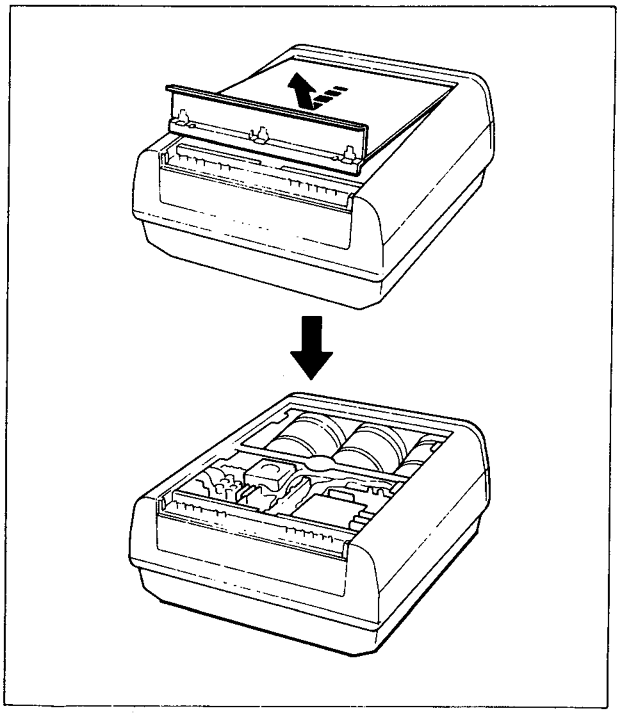
You will need a medium size Phillips head screwdriver.

1 Open the control panel cover.

2 Remove the two screws.



3 Pull the top panel slightly toward you and remove it.

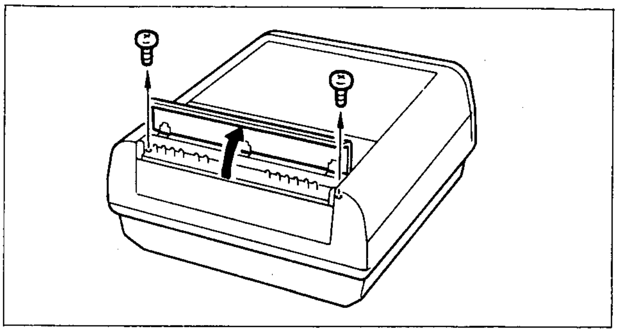


TO OPEN THE CABINET

Open the cabinet when changing the polarity and when converting the unit for 72″ or 200″ projection.

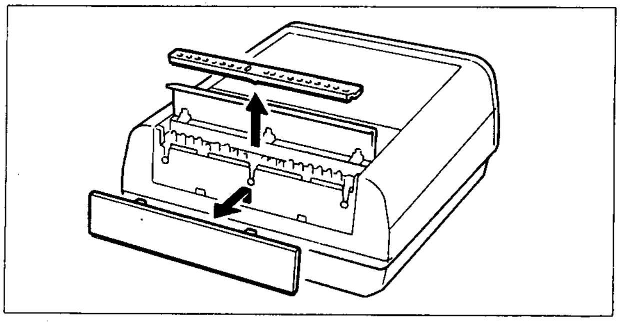
1 Open the control panel cover.

2 Remove the two screws on the control panel.

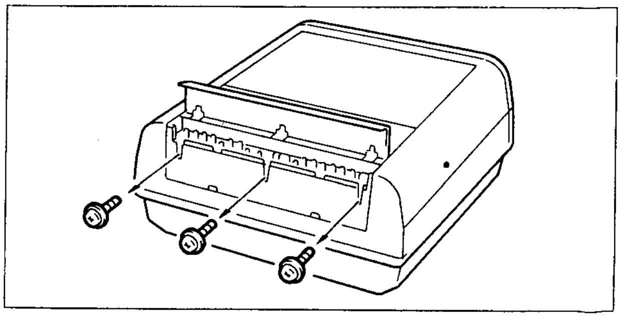


3 Slide the nameplate upward and pull it toward you to remove.

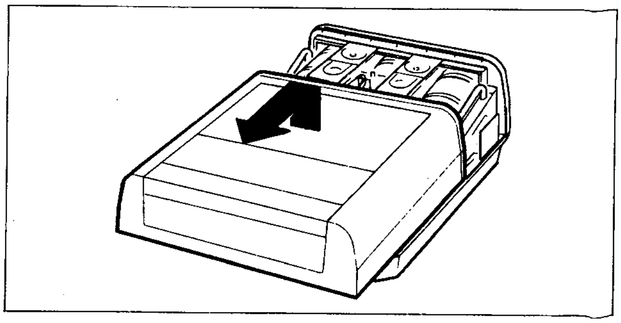
4 Remove the control panel.



5 Remove the three screws.



6 Slightly raise the cabinet and pull it toward you to remove.

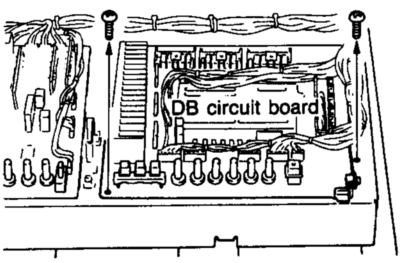


1-9. POLARITY CHANGE

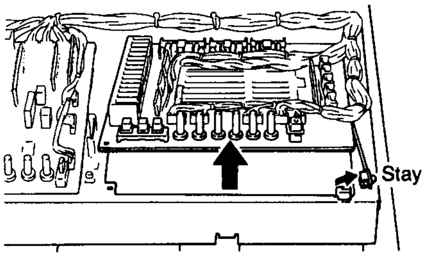
The projector is preadjusted at the factory for use on desk or floor with the bracket side down.
When the projector is installed on the ceiling with the bracket side up, the polarity should be changed.

1. Make sure that power is not connected.
2. Open the cabinet. (See page 19.)
3. Raise the DB circuit board to expose the DA circuit board.

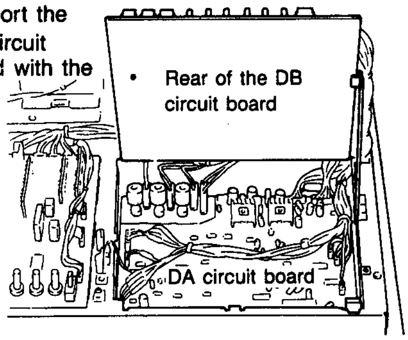
❶ Loosen the two screws.


DB circuit board

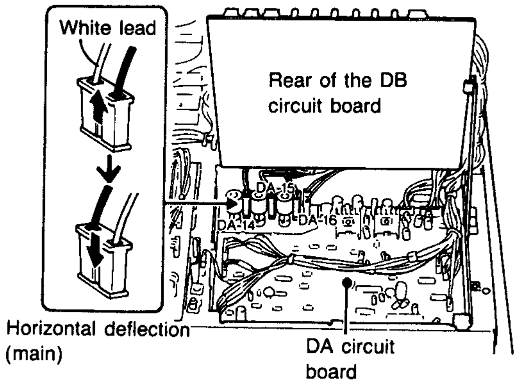
❷ Pressing the stay to the right, raise the DB circuit board.



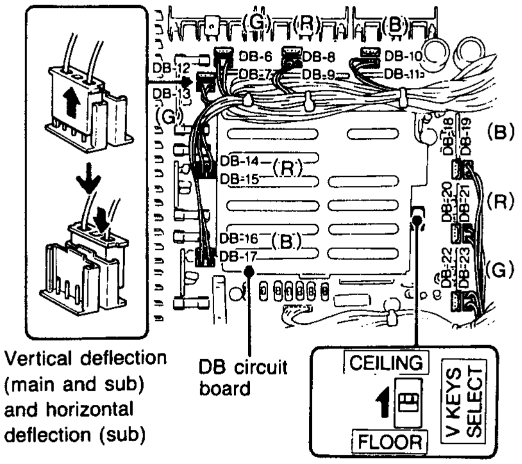
❸ Support the DB circuit board with the stay.


Rear of the DB circuit board
DA circuit board

4. Reverse the polarity of connectors DA-14, 15 and 16.


White lead
Rear of the DB circuit board
DA-15
DA-14
DA-16
Horizontal deflection (main)
DA circuit board

5. Replace the DB circuit board.
6. Move the connectors from receptacles DB-7, 9, 11, 13, 15, 17, 19, 21 and 23 to receptacles 6, 8, 10, 12, 14, 16, 18, 20 and 22 respectively.


(G)
(R)
(B)
DB-6
DB-8
DB-10
DB-12
DB-7
DB-9
DB-11
DB-13
(G)
DB-18
DB-19
(B)
DB-14
(R)
DB-15
DB-20
DB-21
(R)
DB-16
(B)
DB-17
DB-22
DB-23
(G)
Vertical deflection (main and sub) and horizontal deflection (sub)
DB circuit board
CEILING
1
FLOOR
V KEYS SELECT

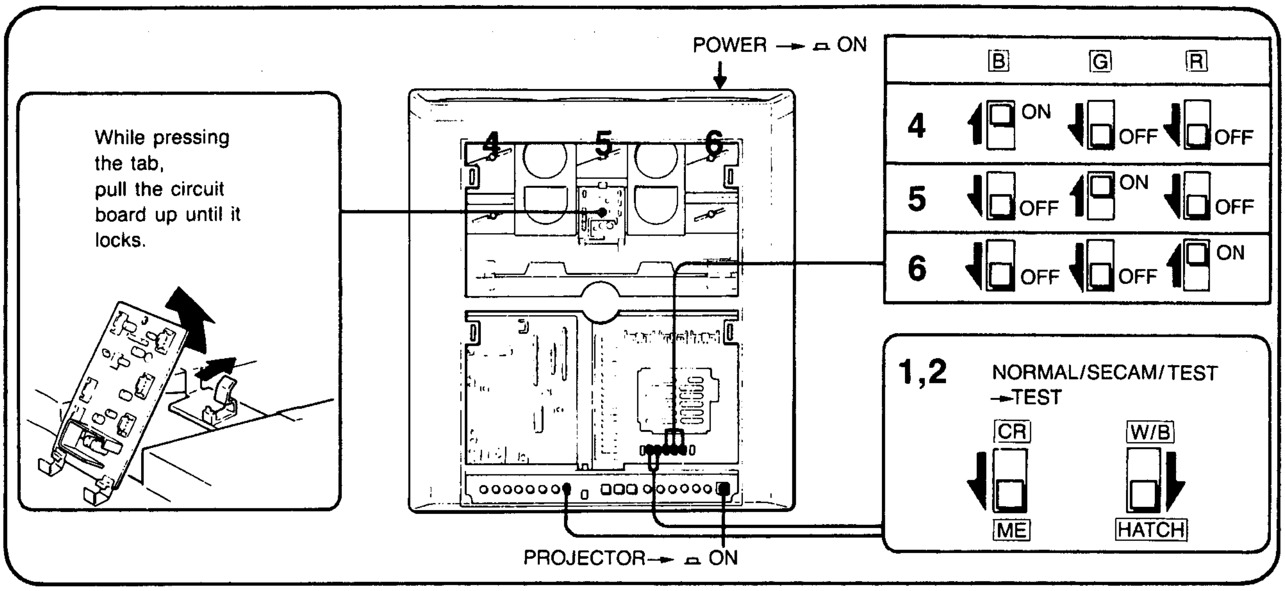
7. Set the V KEYS SELECT switch to the CEILING position.

Note

Check that the connectors are inserted firmly, then proceed to lens focus adjustment with the projector's cabinet removed.

1-10. LENS FOCUS ADJUSTMENT

The lens focus is preadjusted at the factory for 100″ flat screen. For other type screens, the lens focus should be adjusted.

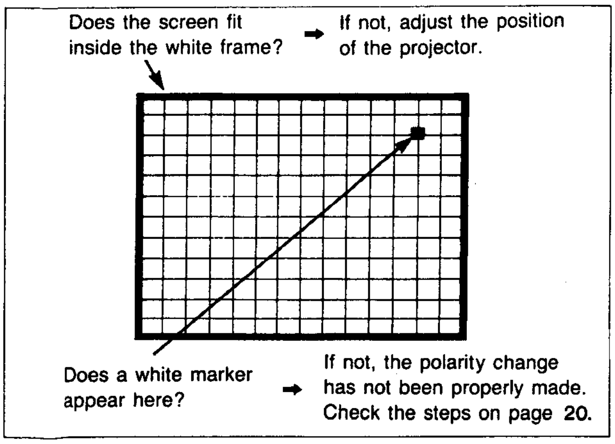

While pressing the tab, pull the circuit board up until it locks.
POWER → ⏏ ON
4
5
6
B
G
R
4 ON OFF OFF
5 OFF ON OFF
6 OFF OFF ON
1,2
NORMAL/SECAM/TEST →TEST
CR
W/B
ME
HATCH
PROJECTOR→ ⏏ ON

Preparations

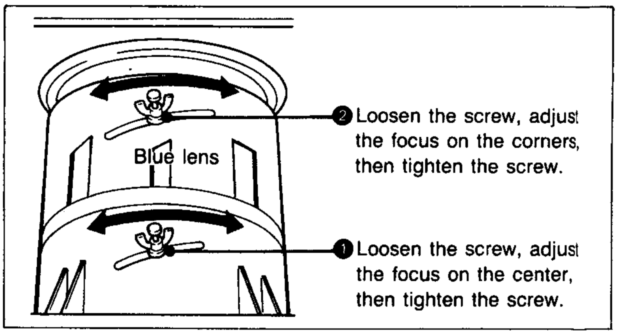
- Install the projector in the correct position on the floor or ceiling.
- Connect the supplied power cord to the AC IN socket and to an AC outlet, depress the POWER switch on the connector panel and the PROJECTOR switch.
  The green POWER lamp will light.
- Open the top panel. (See page 19.)

Adjustment

1. Set the NORMAL/SECAM/TEST selector to TEST.
2. Set the HATCH/W/B switch to HATCH and CR/ME switch to ME (mesh). A cross hatch pattern will be displayed.
3. Check the following.


Does the screen fit inside the white frame?
→ If not, adjust the position of the projector.
Does a white marker appear here?
→ If not, the polarity change has not been properly made. Check the steps on page 20.

4. Set the G (green) and R (red) switches to OFF, then adjust the focus of the blue lens.


Blue lens
❷ Loosen the screw, adjust the focus on the corners, then tighten the screw.
❶ Loosen the screw, adjust the focus on the center, then tighten the screw.

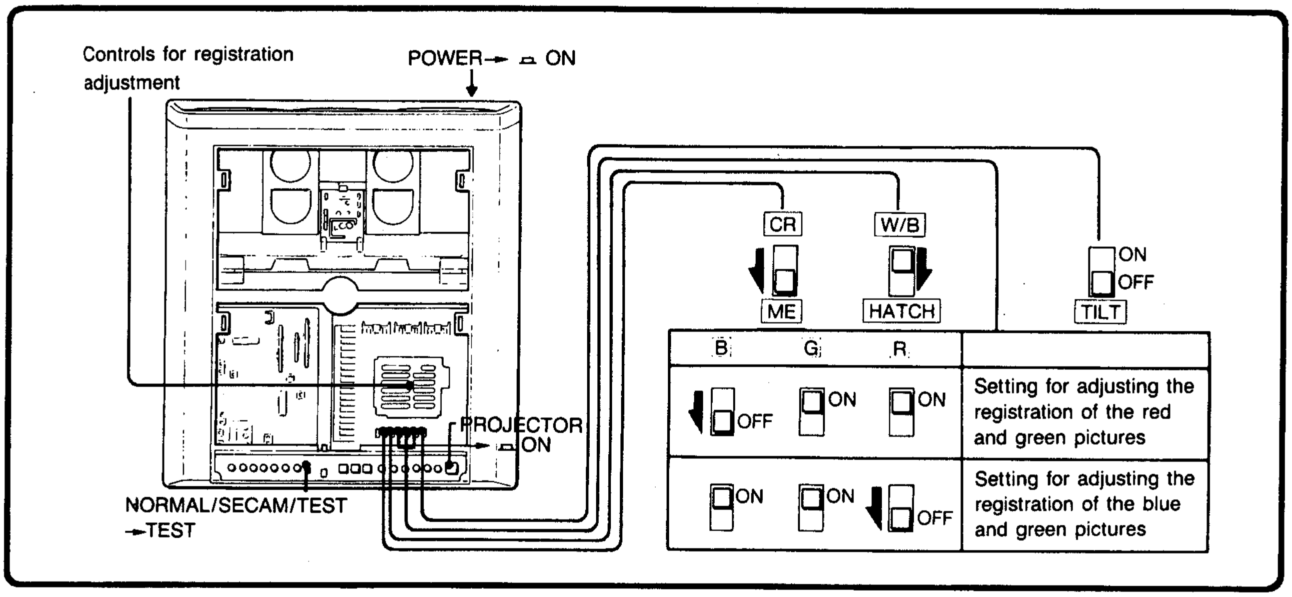
5. Set only the G switch to ON, and the R and B switches to OFF, then adjust the focus of the green lens.
6. Set only the R switch to ON, and the G and B switches to OFF, then adjust the focus of the red lens.
7. Replace the top panel. (Reverse the steps given on page 19.)

Proceed to registration adjustment.

Caution
Take care not to touch portions of the projector other than those indicated above because dangerous high voltages are present. To change the polarity, first turn the POWER switch off.

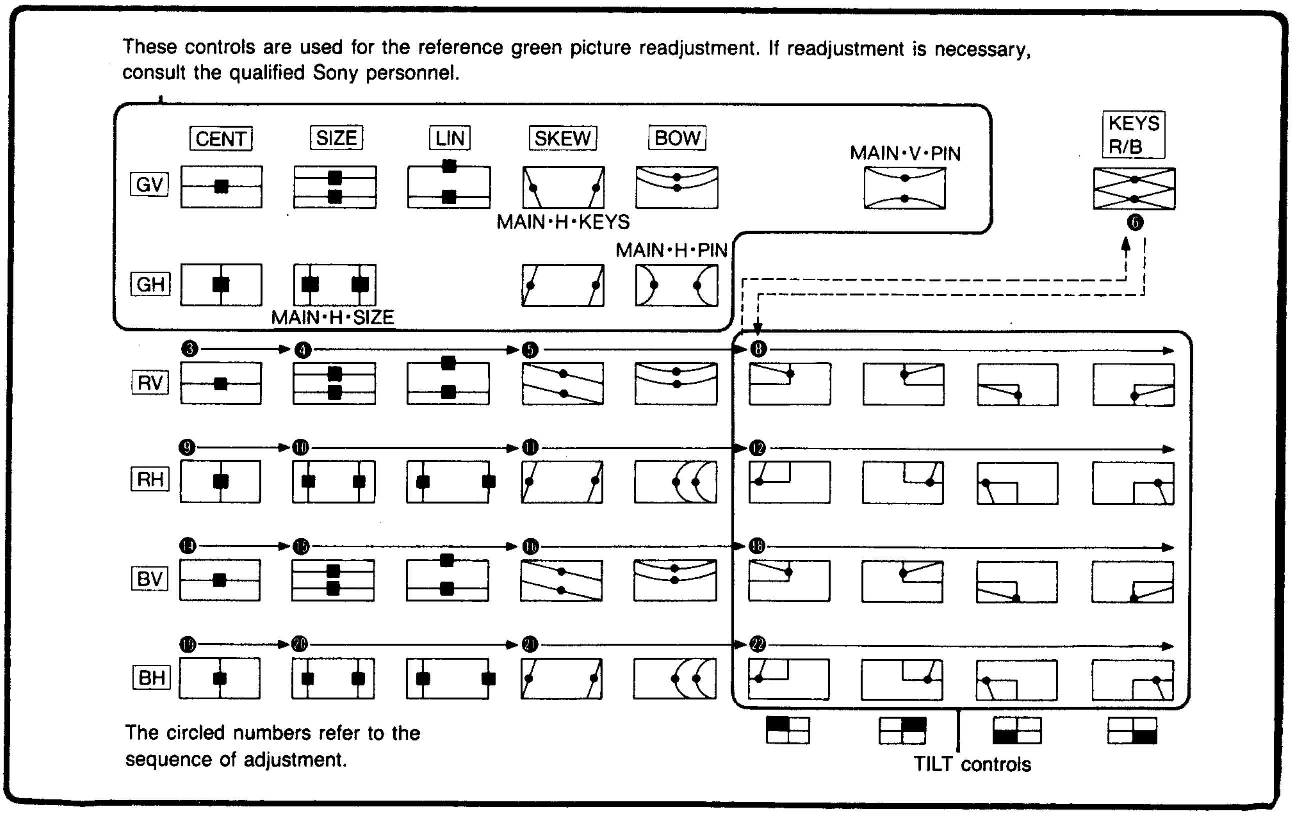
1-11. REGISTRATION ADJUSTMENT

Use a small screwdriver to adjust the controls through the holes.


Controls for registration adjustment
POWER→ ▭ ON
PROJECTOR → ▭ ON
NORMAL/SECAM/TEST →TEST
CR
ME
W/B
HATCH
ON
OFF
TILT

B	G	R	
OFF	ON	ON	Setting for adjusting the registration of the red and green pictures
ON	ON	OFF	Setting for adjusting the registration of the blue and green pictures

Controls for registration adjustment


These controls are used for the reference green picture readjustment. If readjustment is necessary, consult the qualified Sony personnel.
CENT
SIZE
LIN
SKEW
BOW
MAIN·V·PIN
KEYS R/B
GV
MAIN·H·KEYS
MAIN·H·PIN
GH
MAIN·H·SIZE
RV
RH
BV
BH
❸
❹
❺
❻
❽
❾
❿
⓫
⓬
⓭
⓮
⓯
⓰
⓲
⓳
⓴
㉑
㉒
TILT controls

The circled numbers refer to the sequence of adjustment.

Preparations

1 Keep the G switch at ON and set the B and R switches to OFF. A green cross hatch pattern will be displayed.

2 Check the position of the projector, polarity and lens focus, referring to page 20, 21.

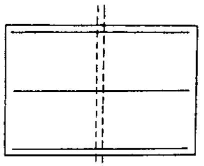
Vertical registration of the red and green pictures

1 Set the B switch to OFF and the G and R switches to ON.

2 Set the TILT switch to OFF (control panel side).

3 Adjust the RV CENT control so that the red horizontal lines and the green horizontal lines converge in the middle of the screen.

4 Adjust the RV SIZE control and RV LIN controls so that the red horizontal lines and the green horizontal lines coverge at the upper and lower sides of the screen.



(Repeat steps **3** and **4** as necessary.)

5 Adjust the RV SKEW and RV BOW controls if the red horizontal lines and the green horizontal lines do not converge in the middle of the screen.

6 Adjust the KEYS R/B control so that the red horizontal lines at the top and bottom of the screen are parallel.

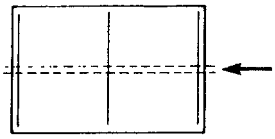
7 Set the TILT switch to ON (lens side).

8 Adjust the RV TILT controls so that the red horizontal lines and the green horizontal lines converge in the corners of the screen.

Horizontal registration of the red and green pictures

9 Adjust the RH CENT control so that the red vertical lines and the green vertical lines converge in the middle of the screen.

10 Adjust the RH SIZE and RH LIN controls so that the red vertical lines and the green vertical lines converge at the right and left sides of the screen.



(Repeat steps **9** and **10** as necessary.)

11 Adjust the RH SKEW and RH BOW controls so that the red vertical lines and the green vertical lines converge in the middle of the screen.

12 Adjust the RH TILT controls so that the red vertical lines and the green vertical lines converge at the corners of the screen.

Proceed to the following adjustments in the same manner as with red and green registration, setting the R switch to OFF and the B and G switches to ON.

Vertical registration of the blue and green pictures

13 Set the TILT switch to OFF.

14 Adjust the BV CENT control.

15 Adjust the BV SIZE, and BV LIN if necessary. (Repeat steps **14** and **15** as necessary.)

16 Adjust the BV SKEW and BV BOW controls.

17 Set the TILT switch to ON.

18 Adjust the BV TILT controls.

Horizontal registration of the blue and green pictures

19 Adjust the BH CENT control.

20 Adjust the BH SIZE, and BH LIN. (Repeat steps **19** and **20** as necessary.)

21 Adjust the BH SKEW and BH BOW controls.

22 Adjust the BH TILT controls.

When registration is complete

Set the switches to the following positions

R, G, B switches	ON position
HATCH/W/B switch	HATCH
CR/ME switch	CR (cross)
TILT	ON position
NORMAL/SECAM/TEST	NORMAL

Replace the top panel. (Reverse the steps given on page 19.)

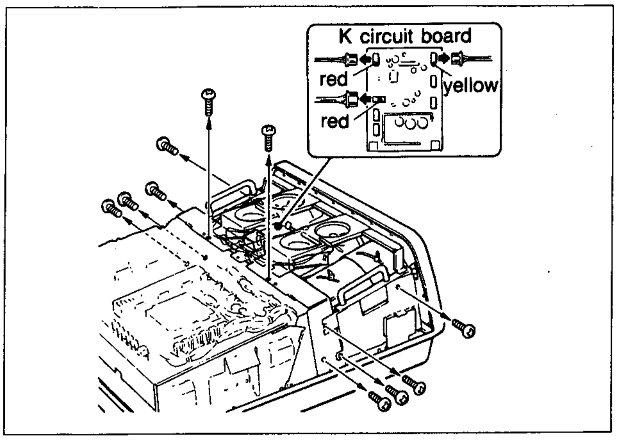
1-12. CONVERSION FOR 72" (67") or 200" (150-250") PROJECTION

1 Separate the lens block from the main body.

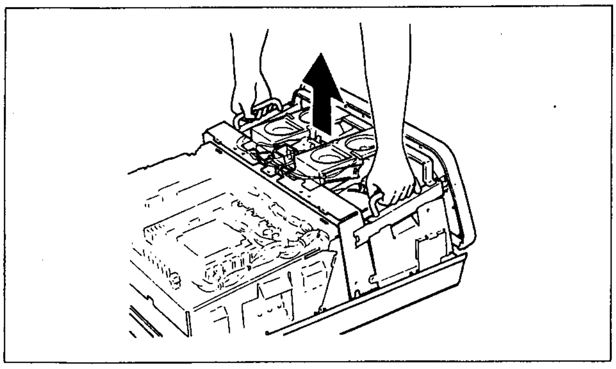
❶ Open the cabinet. (See page 19.)

❷ Disconnect the 3 connectors on the K circuit board.

❸ Loosen the 10 screws.


K circuit board
red
yellow
red

❹ Pull the lens block up and out.

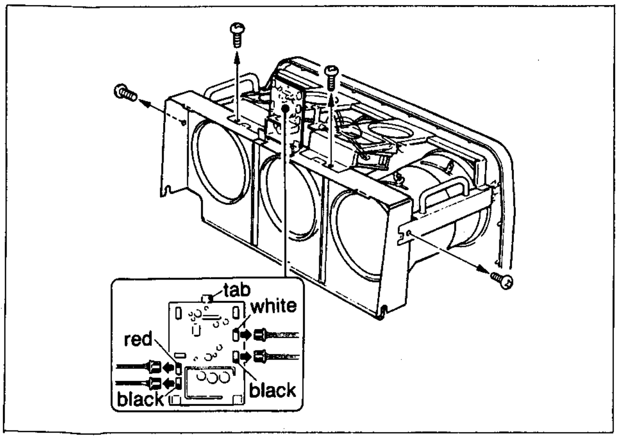


2 Disassemble the lens block.

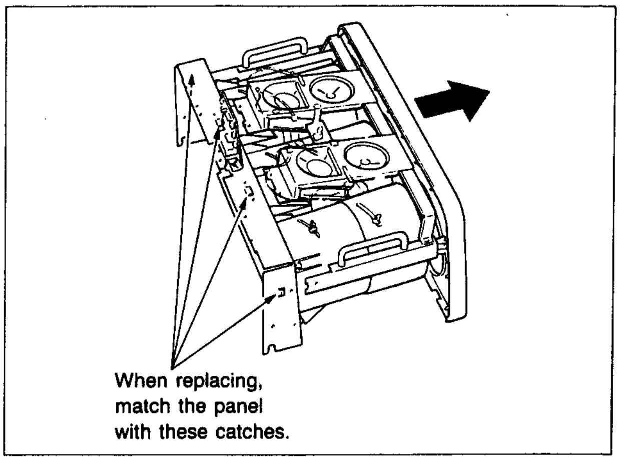
❶ Loosen the 4 screws.

❷ Disconnect the 4 connectors on the K circuit board.

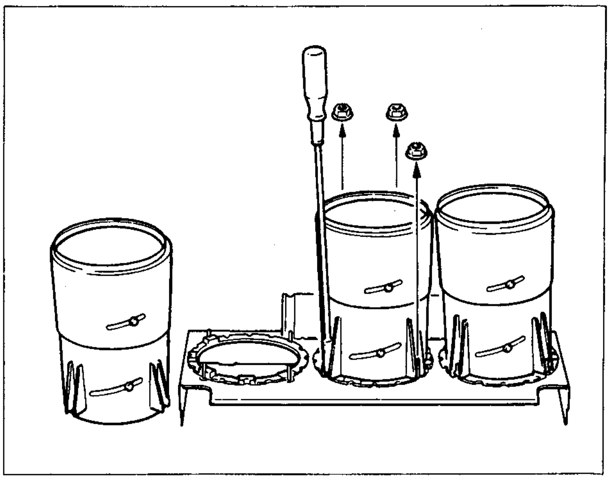
❸ Pressing the tab, raise the K circuit board.


tab
white
red
black
black

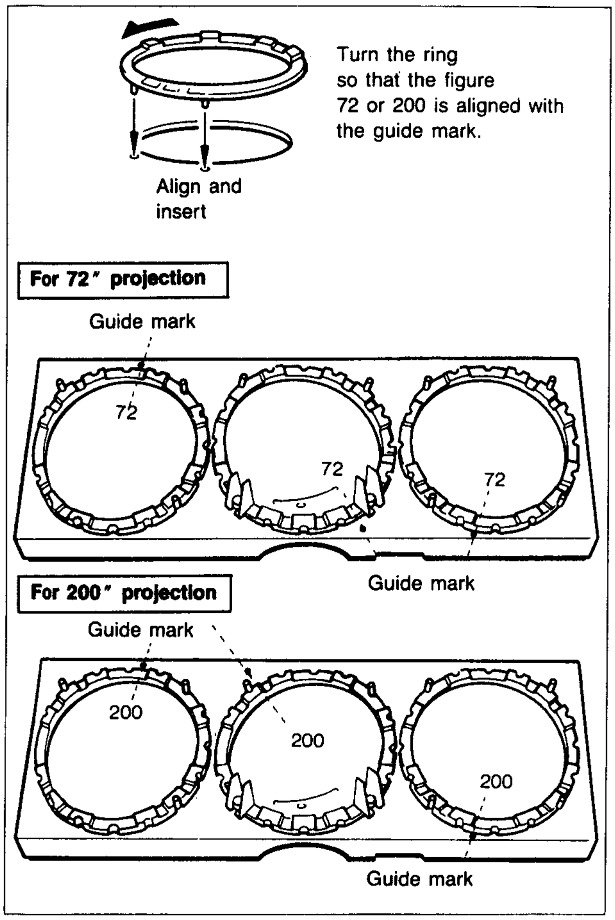
❹ Remove the lens panel.


When replacing,
match the panel
with these catches.

❺ Loosen the 4 nuts and detach all lenses from the lens base.
Use an 8 mm nutdriver.



3 Change the posistions of the lens rings.



Turn the ring so that the figure 72 or 200 is aligned with the guide mark.

Align and insert
For 72″ projection
Guide mark
72
72
72
Guide mark
For 200″ projection
Guide mark
200
200
200
Guide mark

4 Adjust the mounting angles of the CRTs.

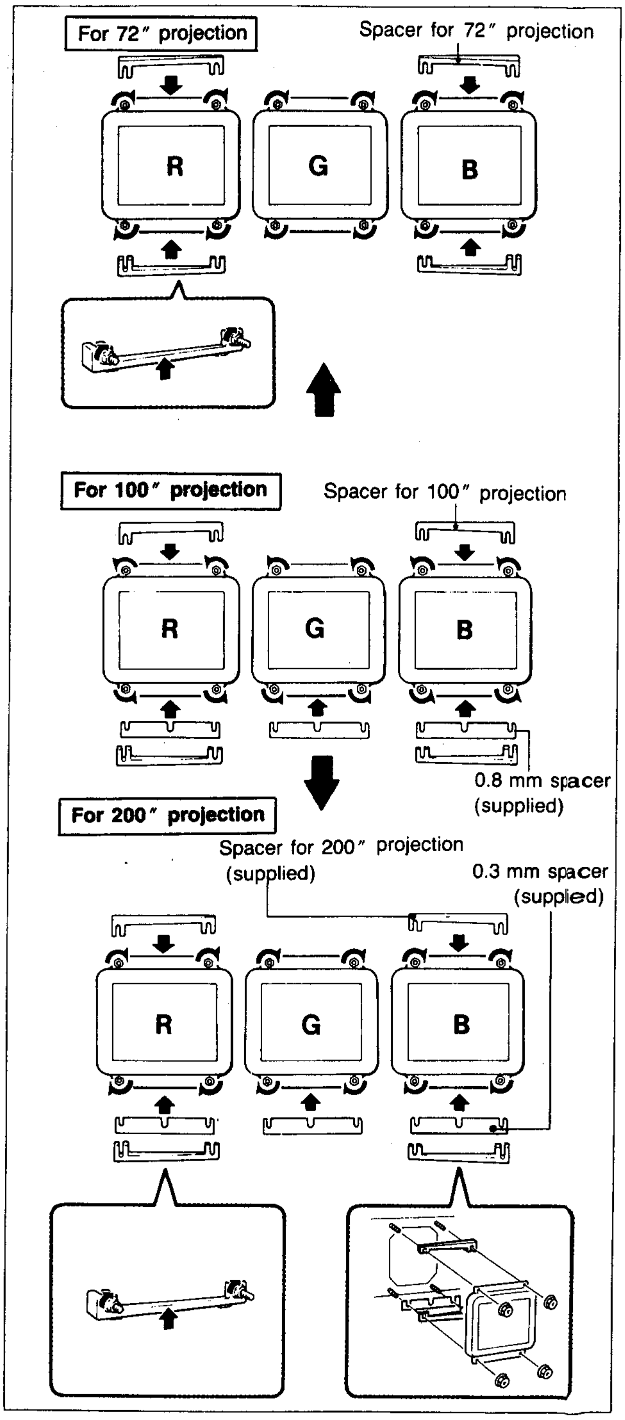
Use an 8 mm nutdriver.

❶ Loosen the nuts and remove all the spacers from the top and bottom of each lens.

❷ Insert the supplied spacers as illustrated. Insert the spacers with the thinner end toward the center CRT.

❸ Tighten all the nuts completely for accurate angles of the lenses.

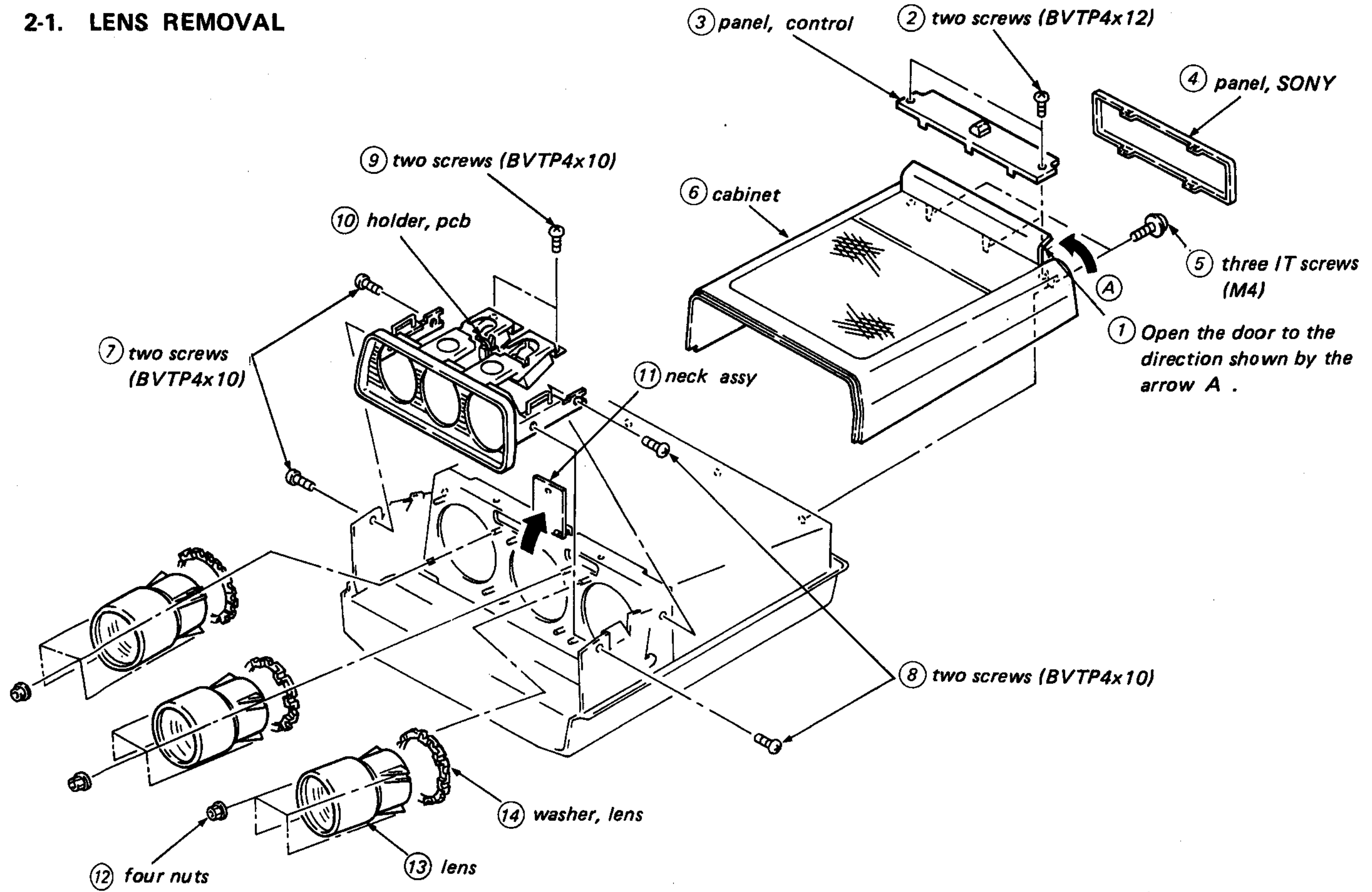
After adjustment is complete, replace the lens block in the main body and close the cabinet. (Reverse the steps given in section 1.)



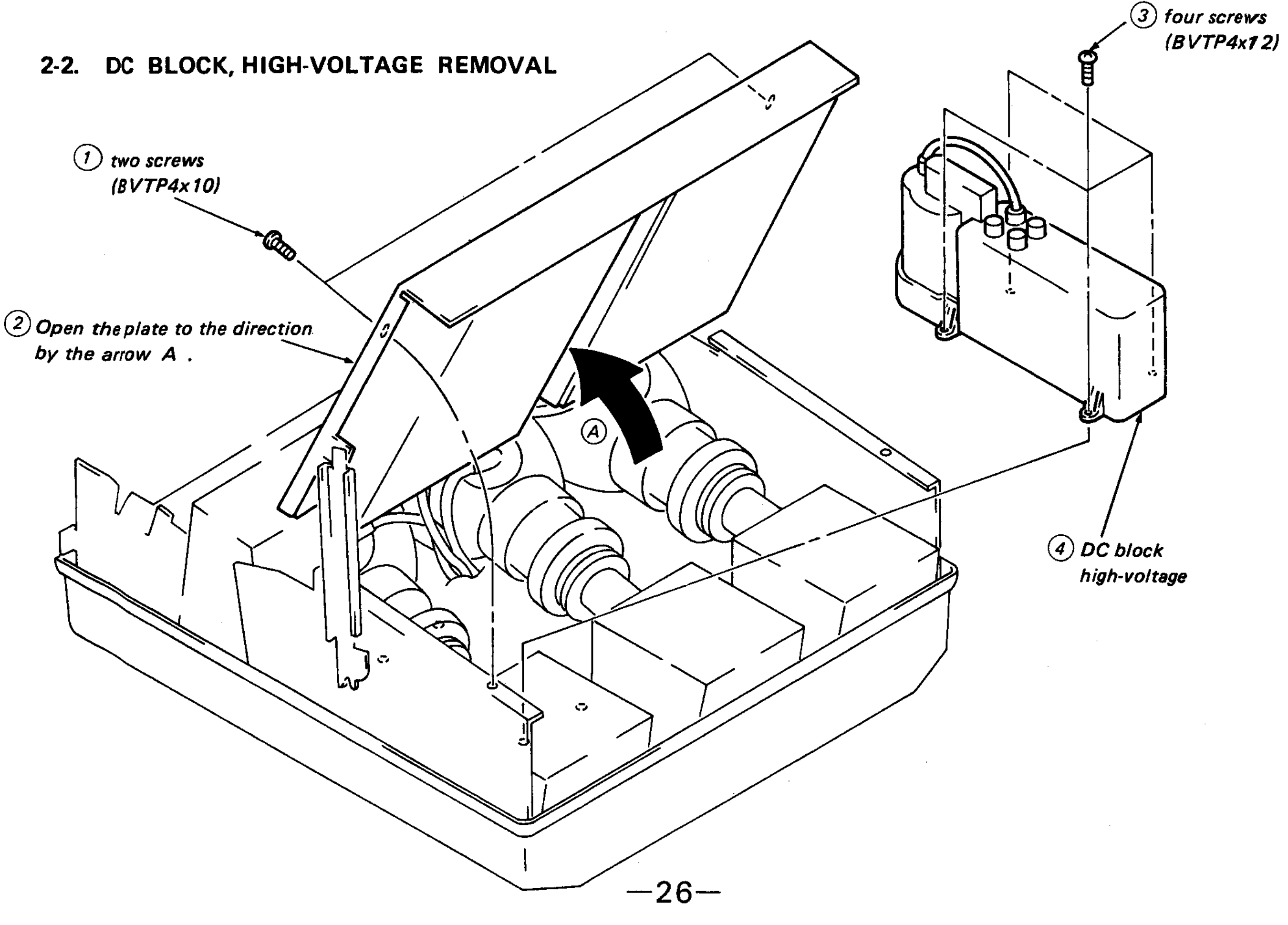
For 72″ projection
Spacer for 72″ projection
R
G
B
For 100″ projection
Spacer for 100″ projection
R
G
B
0.8 mm spacer (supplied)
For 200″ projection
Spacer for 200″ projection (supplied)
0.3 mm spacer (supplied)
R
G
B

SECTION 2
DISASSEMBLY

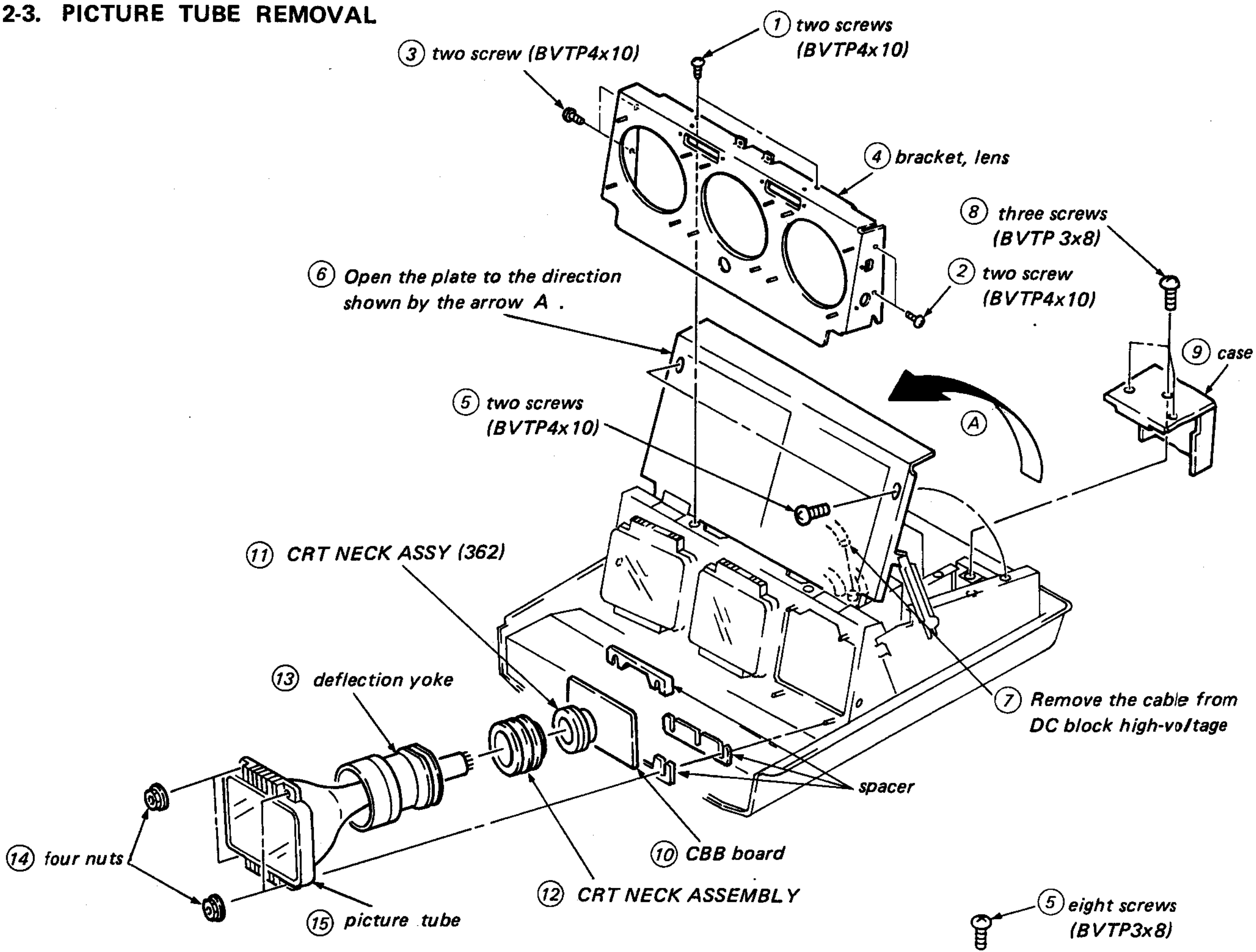
2-1. LENS REMOVAL


③ panel, control
② two screws (BVTP4x12)
④ panel, SONY
⑨ two screws (BVTP4x10)
⑥ cabinet
⑩ holder, pcb
⑤ three IT screws (M4)
Ⓐ
① Open the door to the direction shown by the arrow A .
⑦ two screws (BVTP4x10)
⑪ neck assy
⑧ two screws (BVTP4x10)
⑭ washer, lens
⑫ four nuts
⑬ lens

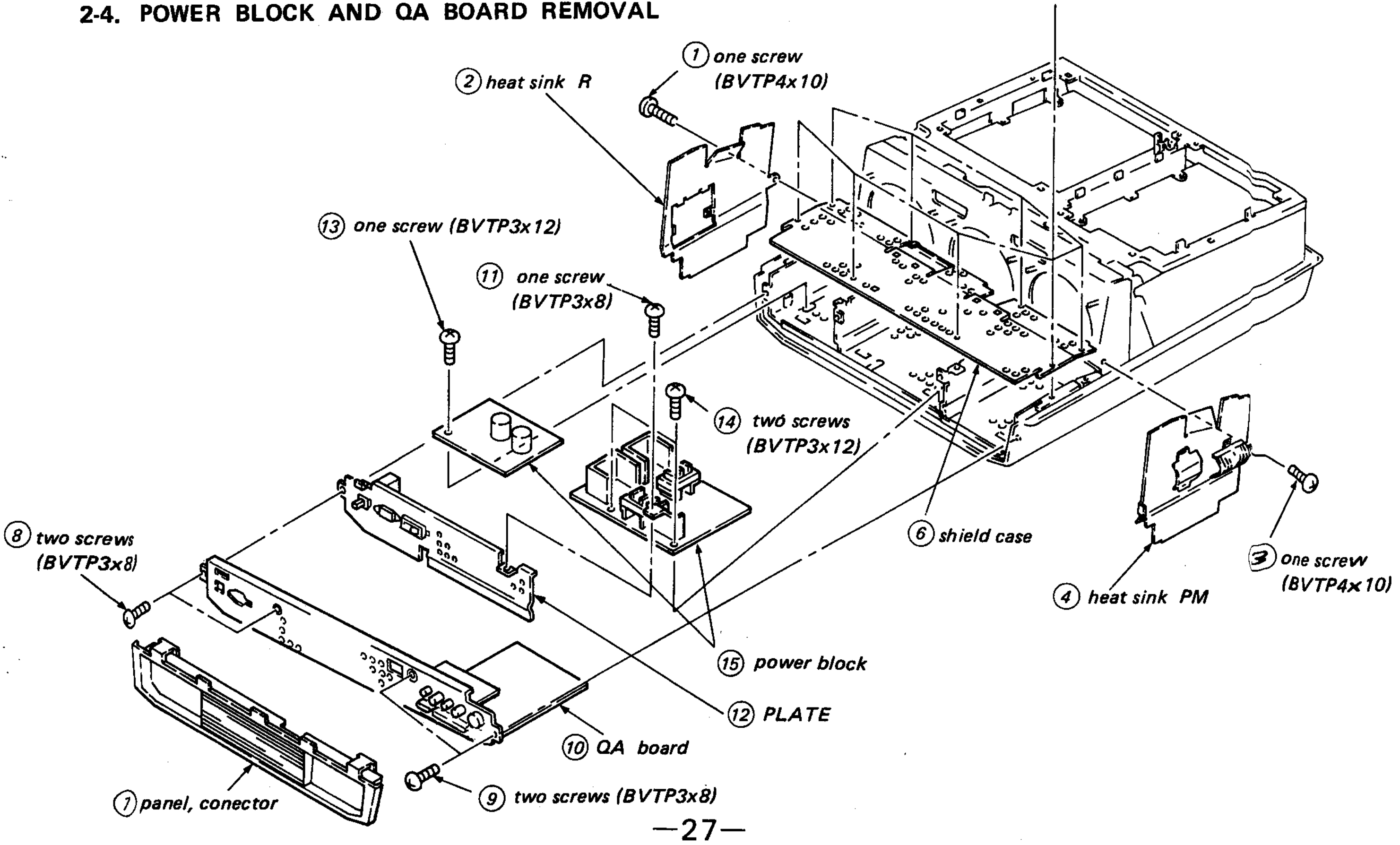
2-2. DC BLOCK, HIGH-VOLTAGE REMOVAL


③ four screws (BVTP4x12)
① two screws (BVTP4x10)
② Open the plate to the direction by the arrow A .
Ⓐ
④ DC block high-voltage

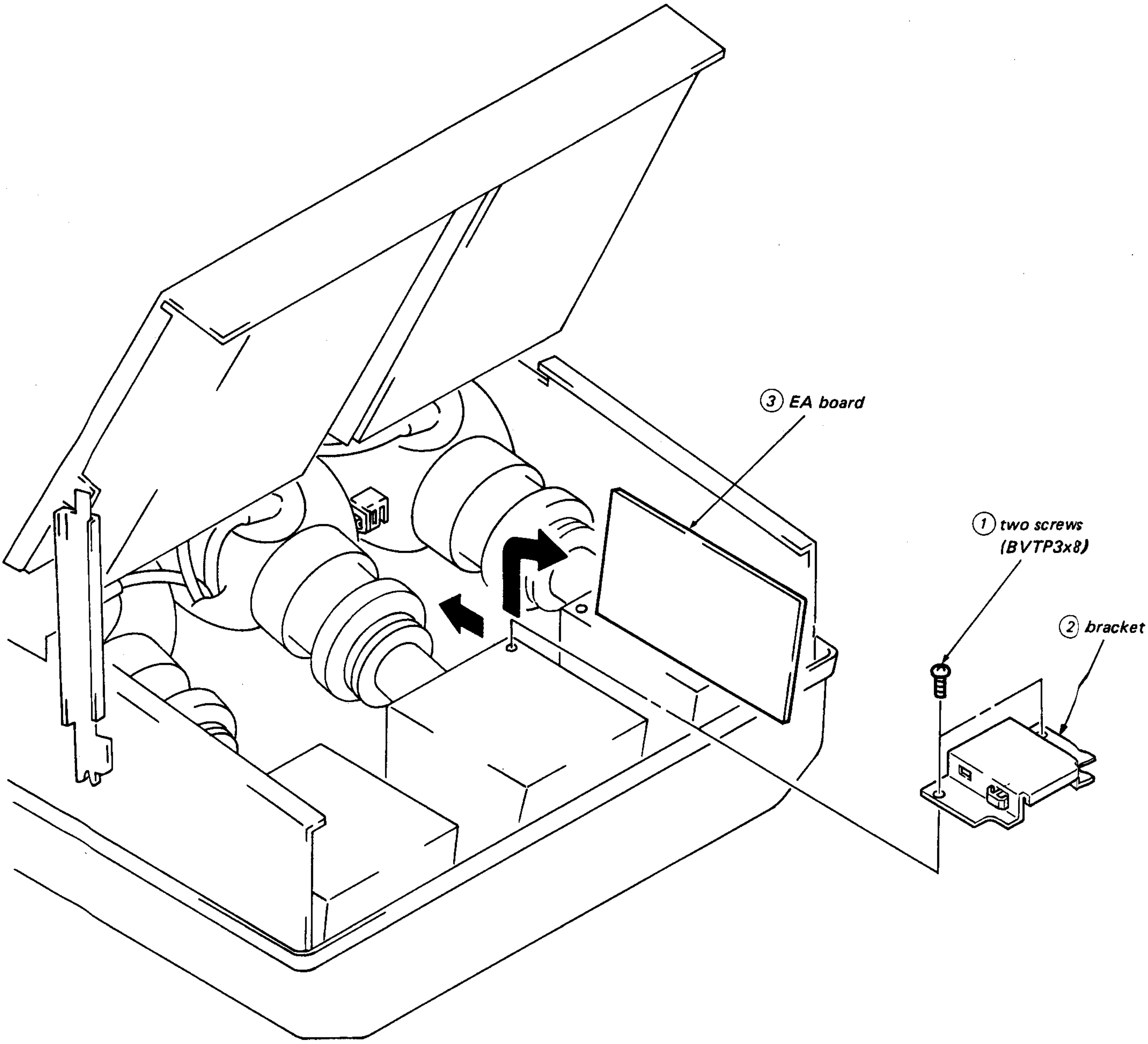
2-3. PICTURE TUBE REMOVAL


① two screws (BVTP4x10)
③ two screw (BVTP4x10)
④ bracket, lens
⑧ three screws (BVTP 3x8)
② two screw (BVTP4x10)
⑥ Open the plate to the direction shown by the arrow A .
⑨ case
⑤ two screws (BVTP4x10)
A
⑪ CRT NECK ASSY (362)
⑬ deflection yoke
⑦ Remove the cable from DC block high-voltage
spacer
⑭ four nuts
⑩ CBB board
⑫ CRT NECK ASSEMBLY
⑮ picture tube

2-4. POWER BLOCK AND QA BOARD REMOVAL


⑤ eight screws (BVTP3x8)
① one screw (BVTP4x10)
② heat sink R
⑬ one screw (BVTP3x12)
⑪ one screw (BVTP3x8)
⑭ two screws (BVTP3x12)
⑧ two screws (BVTP3x8)
⑥ shield case
③ one screw (BVTP4x10)
④ heat sink PM
⑮ power block
⑫ PLATE
⑩ QA board
⑦ panel, conector
⑨ two screws (BVTP3x8)

2-5. EA BOARD REMOVAL


③ EA board
① two screws
(BVTP3x8)
② bracket

SECTION 3
CIRCUIT DESCRIPTIONS

3-1. H.V REG

This is composed of the conventional series regulator. Pulse width is 7μsec and wave peak is 840–950Vp-p. At this time HV Reg out voltage is:

15kHz:	58–66V
26kHz:	104–117V

Drive factor is controlled by F-V conversion, the same as H. out.

3-2. PROTECTOR Circuit

HV Protector

The potential which is resistor divided by DC block 600MΩ and R31, 82, 83 is compared to the D8 potential. Normally D8 potential is high, so IC2 (2/2) pin ① is low.

When high voltage rises and the potential goes over D8 potential, pin ① goes high.

As a result, IC2 pin ⑤ becomes higher than pin ⑥, pin ⑦ also goes high and is held by D7.

This output enters IC3 (1/2) pin ⑤, pin ⑦ also goes high and turns on Q8.

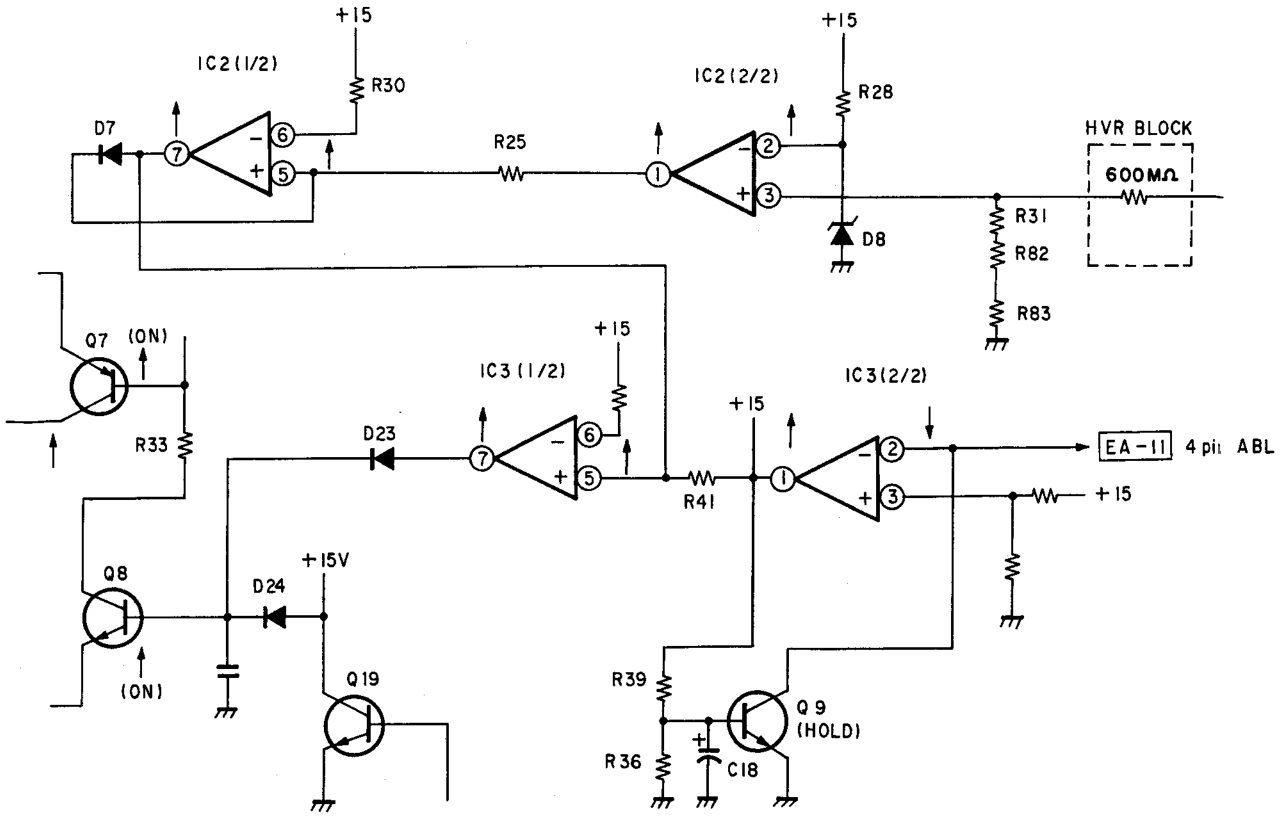
This causes Q7 to go on also, and the collector goes high.

This turns off the drive pulse for the converter.

When the CONV pulse disappears, DA board circuit operates, the relay is turned off and power is cut.

3-3. BEAM CURRENT PROTECTOR

When the beam flows, the potential at EA-11 connector ABL pin ④ drops. When ABL is passed (about 1500–1800μA), IC3 (2/2) pin ② potential drops below that of pin ③, and pin ① goes high. Q9 is a hold circuit. Therefore, the same as above, IC3 pin ⑦ goes high, turning Q7 on, and high voltage is stopped.


+15
IC2(1/2)
R30
D7
⑦
⑥
⑤
R25
IC2(2/2)
+15
R28
①
②
③
D8
HVR BLOCK
600MΩ
R31
R82
R83
Q7 (ON)
R33
IC3(1/2)
+15
⑥
⑦
⑤
D23
R41
+15
IC3(2/2)
①
②
③
EA-11
4 pin ABL
+15
Q8
(ON)
D24
+15V
Q19
R39
R36
C18
Q9
(HOLD)

SECTION 4
SET-UP ADJUSTMENTS

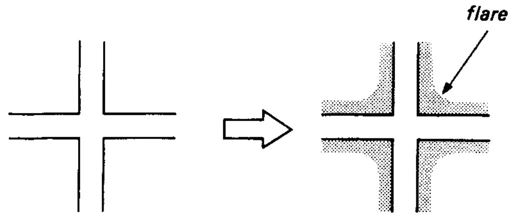
4-1. BASIC ADJUSTMENTS

Basic Adjustments
<Registration>

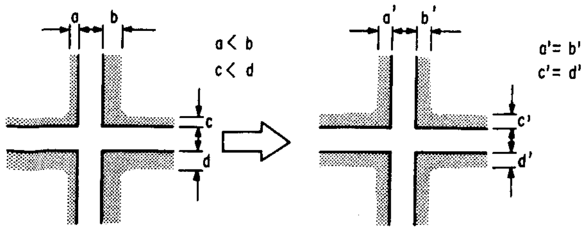
1) Degauss the entire chassis.
2) Set the variable resistor on the DB board to mechanical center. Also, set the BA board H CENT and V CENT to mechanical center.
3) Adjust the knobs and switches on the set as follows:
   BRIGHT: fully clockwise (maximum)
   PICTURE:maximum
   V. KEY SELECT (S2): Floor
   TILT SW (S1): OFF

4-2. GREEN FOCUS Adjustment

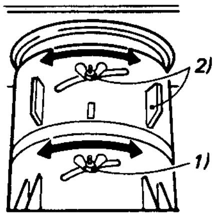
1) Receive a monoscope signal.
2) Cover the RED and BLUE lenses.
3) Set the GREEN lens SUB lens fully forward.
4) Rotate the MAIN lens and set for optimum focus on the screen.
5) Turn the GREEN focus VR on the focus pack and set for optimum conditions.
6) Rotate the MAIN lens for best focus in the center of the screen and temporarily tighten the lens screw.
7) Rotate the SUB lens for best focus in the center of the screen and tighten the lens screw.
8) Loosen the MAIN lens screw, fine adjust the focus, then tighten the MAIN lens screw.
9) Set to the crosshatch signal (with the unit internal signal).
10) Adjust to under focus with the green focus VR of the focus pack, as shown in the figure.



11) Adjust the 2-pole Mg so that the same flare condition is obtained in the horizontal and vertical directions, as shown in the figure.



12) Adjust to just focus with the green focus VR of the focus pack.



2) Loosen the screw and adjust the focus, then for the periphery tighten the screw again. (MAIN lens)

1) Loosen the screw and adjust the center focus, then tighten the screw again. (SUB lens)

Figure 1-1

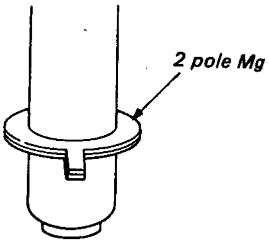


Figure 1-2

4-3. RED FOCUS Adjustment

1) Remove the RED lens cover and cover the GREEN and BLUE lenses.
2) Adjust in the same way as for GREEN FOCUS adjustment, steps 2-12.

4-4. BLUE FOCUS Adjustment

1) Remove the BLUE lens cover and cover the RED lens.
2) Adjust in the same way as for GREEN FOCUS adjustment, steps 2-12.

4-5. GREEN Picture Adjustment

1) Input a PAL monoscope signal.
2) Loosen the DY screw and adjust so that the center monoscope line is parallel to those at the left and right, then temporarily tighten the screw.
3) Loosen the SUB DY screw and adjust so that the signal moves parallel, to the left and right, when the DB board green H.CENT VR (RV106) is moved, then temporarily tighten the screw.
4) Adjust DB board green H.CENT VR (RV106) and green V.CENT VR (RV101) so that the center of the monoscope signal is lined up to the screen center mark.

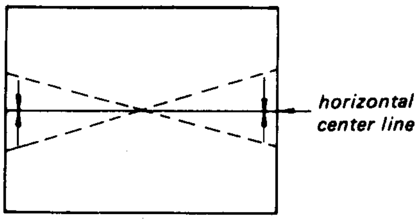


Figure 2

5) Tighten the screws after positioning the DY and SUB DY correctly.
6) Adjust DB board MAIN H.SIZE VR (RV107), green V.SIZE VR (RV102) and green V.LIN (RV103) and perform rough size adjustment.

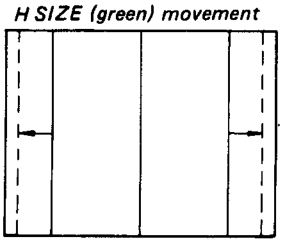


Figure 3

7) Adjust DB board MAIN V.PIN VR (RV2) so that the lines at the top and bottom of the signal are almost parallel with the screen.

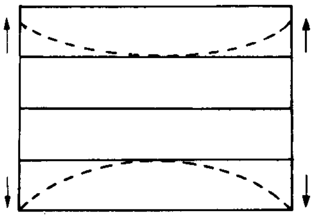


Figure 4

8) Receive an NTSC monoscope signal.
9) Adjust DB board green V.BOW (RV105) so that the monoscope signal horizontal center line is parallel with the screen horizontal center line, then adjust green V.CENT VR (RV101) again to match up to the center line.

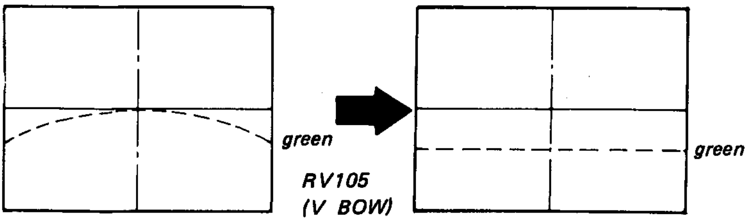


Figure 5

10) Receive a PAL monoscope signal.
11) Adjust DB board green V.LIN (RV103) so that the number of grids at the top and bottom of the signal are the same.

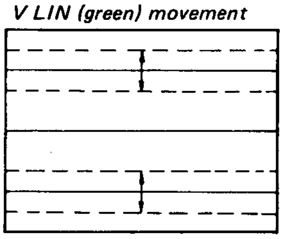


Figure 6

12) Adjust DB board green V.SIZE (RV102) so that there are about 11.0 grids at the top and bottom of the monoscope signal.

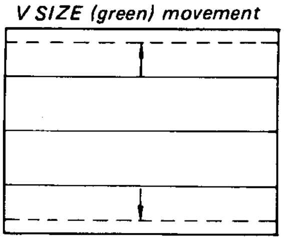


Figure 7

13) Adjust DB board MAIN V.PIN (RV2) so that the top and bottom monoscope signal lines are parallel with the screen frame.
14) Line up the monoscope signal center vertical line to the screen center vertical line by adjusting DB board green H.SKEW (RV108) and green H.CENT (RV106).

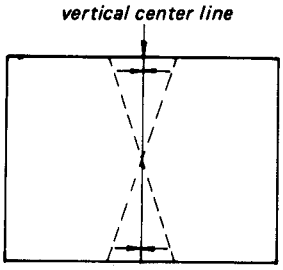


Figure 8

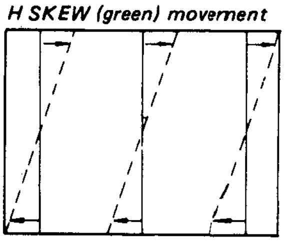


Figure 9

15) Adjust DB board MAIN H.KEYS (RV104) and MAIN H.PIN (RV109) so that the monoscope signal left and right vertical lines are parallel with the screen.
16) Adjust DB board MAIN H.SIZE (RV107) so that the number of grids to the left and right of the monoscope signal center vertical line is about 7.4 on each side.

4-6. BLK Adjustment

1) Receive a PAL monoscope signal.
2) Adjust the right/left BLK balance with the BLK BAL VR (RV504) on the DA board.
3) Adjust to just before the point where the eighth grid line disappears on the left and right with DA board BLK VR (RV501).
4) Adjust DA board BLK VR (RV503) so that the sixth grid at the top of the monoscope signal is visible and blanking is applied.
5) Adjust DA board BLK VR (RV502) so that the sixth grid at the bottom of the monoscope signal is visible and blanking is applied.

4-7. RED DY Adjustment

1) Turn DB board blue CUT OFF SW off and project green and red.
2) Adjust DB board RED V.CENT (RV110), RED V.LIN (RV113), RED H.CENT (RV120) and RED H.LIN (RV113) to line up the red and green monoscope centers.

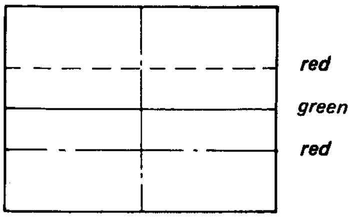


Figure 10

3) Loosen the RED DY screw.
4) Set the BA board HATCH SW to HATCH.
5) Adjust DB board RED V.BOW (RV115) so that the horizontal center line is straight.

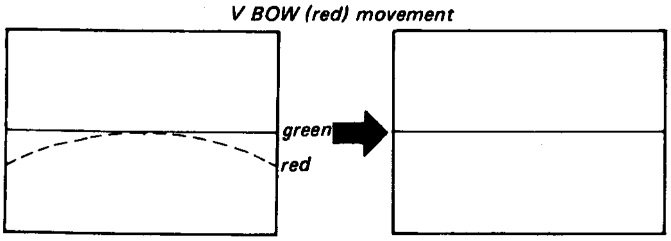


Figure 11

6) Rotate the RED DY until the horizontal center line is parallel with green, then tighten the screw.
7) Loosen the SUB DY screw, rotate the DY, and adjust so that the hatch moves parallel to the right and left, when the DB board RED H.CENT VR (RV120) is moved, then tighten the screw.

4-8. TILT Adjustment

1) Set BA board HATCH switch to HATCH.
2) Line up the red horizontal center line center with the center of the green horizontal center line by adjusting DB board RED V.CENT (RV110), RED V.BOW (RV115) and RED V.SKEW (RV114).
3) Line up the red top and bottom horizontal lines with the green top and bottom horizontal lines by adjusting DB board RED V.SIZE (RV112), RED V.LIN (RV113) and RED V.SKEW (RV114).
4) Set the RED V.TILT VR's 1-4 as shown below.

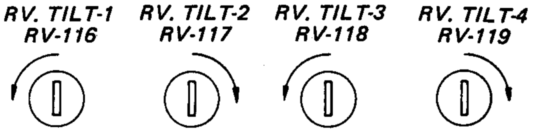


Figure 12

5) Turn DB board TILT SW (S1) to ON.
6) Set BA board HATCH SW to NORMAL.
7) Receive an all-white signal.
8) Check that the red or green luminescent line can not be seen on the screen horizontal center line.
   If it is visible, adjust DB board KEYS CENT VR (R1) until it disappears.
9) Turn the TILT SW to OFF.
10) Set the RED V.TILT VR's 1-4 to mechanical center.
11) Set BA board HATCH SW to HATCH.
12) Adjust RED and BLUE V.KEYS (RV147) until the top and bottom horizontal green and red lines match (minimum distortion balanced evenly at all four corners).

4-9. G-R H. REGISTRATION Adjustment

1) Adjust DB board RED H.BOW (RV124) so that the RED vertical center line is straight.

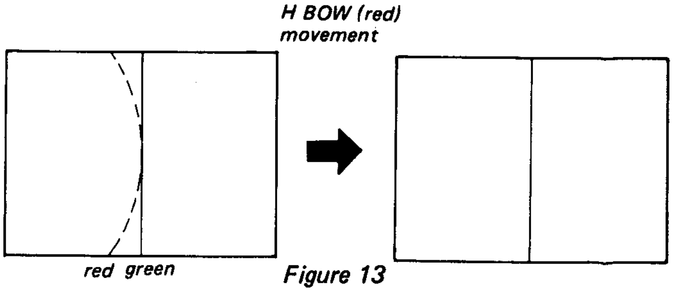


Figure 13

2) Adjust DB board RED H.SKEW (RV123) so that the RED vertical center line is parallel to the green vertical center line.

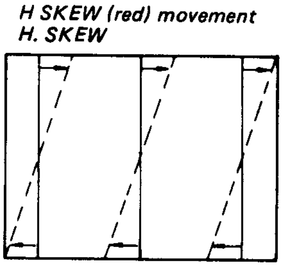


Figure 14

3) Adjust DB board RED H.CENT (RV120) so that the red and green vertical center lines match up.

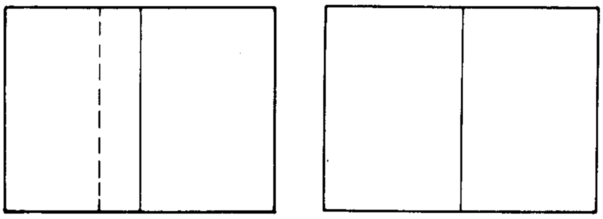
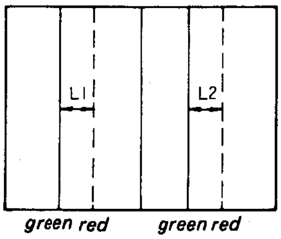


Figure 15

4) Adjust DA board RED H.SIZE (L801) and DB board RED H.LIN (RV122) so that the centers of the RED left and right vertical lines match up to the centers of the green left and right vertical lines.



(1) Adjust RV121 (R.H SIZE) so that the red and green vertical lines overlap at the left and right sides of the screen, or so that L1 and L2 are the same distances.

Figure 16

4-10. G-R TILT Adjustment

1) Turn DB board TILT SW (S1) to ON.
2) Adjust DB board RED V.TILT-1 (RV116) and line up the RED upper left horizontal line to green.
3) Adjust DB board RED V.TILT-2 (RV117) and line up the RED upper right horizontal line to green.
4) Adjust DB board RED V.TILT-3 (RV118) and line up the RED lower left horizontal line to green.
5) Adjust DB board RED V.TILT-4 (RV119) and line up the RED lower right horizontal line to green.
6) Adjust DB board RED H.TILT-1 (RV125) and line up the RED upper left vertical line to green.
7) Adjust DB board RED H.TILT-2 (RV126) and line up the RED upper right vertical line to green.
8) Adjust DB board RED H.TILT-3 (RV127) and line up RED lower left vertical line to green.
9) Adjust DB board RED H.TILT-4 (RV128) and line up RED lower right vertical line to green.

4-11. BLUE DY Adjustment

1) Set the BA board HATCH SW to NORMAL and receive a monoscope signal.
2) Turn the DB board RED CUT OFF SW to OFF and turn the BLUE CUT OFF SW to ON.
3) Line up the BLUE monoscope signal center to green center by adjusting DB board BLUE V.CENT (RV129), BLUE V.LIN (RV131), BLUE H.CENT (RV138) and BLUE H.LIN (RV140).
4) Loosen BLUE DY screw.
5) Set BA board HATCH SW to HATCH.
6) Adjust DB board BLUE V.BOW (RV133) so that the center horizontal line is straight.
7) Adjust BLUE DY so that the horizontal center line is parallel to green, then tighten the DY screw.
8) Loosen the SUB DY screw and rotate to adjust so that the hatch moves parallel to the left and right when DB board BLUE H.CENT VR (RV138) is moved, then tighten the screw.

4-12. G-B V. REGISTRATION Adjustment

1) Line up the blue horizontal center line to the green horizontal center line by adjusting DB board BLUE V.CENT (RV129), BLUE V.BOW (RV133) and BLUE V.SKEW (RV132).
2) Adjust DB board BLUE V.SIZE (RV130) and BLUE V.LIN (RV131) so that the centers of the blue top and bottom horizontal lines match up to the centers of the green top and bottom horizontal lines.

4-13. G-B H. REGISTRATION Adjustment

1) Adjust DB board BLUE H.BOW (RV142) so that the blue vertical center line is straight.
2) Adjust DB board BLUE H.SKEW (RV141) so that the blue vertical center line is parallel to the green vertical center line.
3) Adjust DB board BLUE H.CENT (RV138) so that the blue vertical center line matches up to the green vertical center line.
4) Adjust DA board BLUE H.SIZE (L803) and DB board BLUE H.LIN (RV140) so that the centers of left and right blue vertical lines match up to the centers of the green left and right vertical lines.

4-14. G-B TILT Adjustment

1) Line up the top left blue horizontal line to green by adjusting DB board BLUE V.TILT-1 (RV134).
2) Line up top right blue horizontal line to green by adjusting DB board BLUE V.TILT-2 (RV135).
3) Line up bottom left blue horizontal line to green by adjusting DB board BLUE V.TILT-3 (RV136).
4) Line up bottom right blue horizontal line to green by adjusting DB board BLUE V.TILT-4 (RV137).
5) Line up top left blue vertical line to green by adjusting DB board BLUE H.TILT-1 (RV143).
6) Line up to right blue vertical line to green with DB board BLUE H.TILT-2 (RV144).
7) Line up bottom left blue vertical line to green with DB board BLUE H.TILT-3 (RV145).
8) Line up bottom right blue vertical line to green with DB board BLUE H.TILT-4 (RV146).

4-15. V. KEYS SELECT SW Operation Check

1) Set DB board V.KEYS SELECT SW (S2) to CEILING.
2) Check that the crosshatch horizontal lines have green at the center with red and blue not lined up.
3) Confirm that registration is corrected when the V.KEYS SELECT SW is set to FLOOR.
4) Set BA board HATCH SW to NORMAL.

4-16. White Balance Adjustment

1) Turn the focus pack RED, GREEN and BLUE G2 VR's to minimum.
2) Set picture VR and color VR to minimum, set bright VR to mechanical center and receive a color bar signal.
3) Adjust so that the red bar glows faintly by adjusting focus pack GREEN G2 VR.
4) Set bright VR to minimum.
5) Adjust white balance with the RED and BLUE G2 VR's. When fine adjustment can not be done with the G2 VR's, adjust with the BA board RGB BKG VR's.
6) Set picture VR and bright VR to maximum.
7) Adjust white balance with BA board R DRIVE VR and B DRIVE VR.

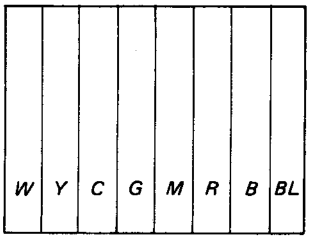


Figure 17

SECTION 5
SAFETY RELATED ADJUSTMENTS

5-1. EA BOARD ADJUSTMENTS

- *When replacing the following components, make the HV HOLD DOWN, HV REG, Vcc REG, BEAM CURRENT PROTECTOR, and OVP CIRCUIT.*

⊠ R82, R83 . . . . . HV HOLD DOWN CHECK
◩ <EA Board> R23, R24, R28, R29, R31, R32, R33 R34, R38, R40, R82, R83, D8, D23, Q7, Q8, IC2, IC3, EA board complete HV BLOCK.

⊠ R84, R85 . . . . . HV REGULATOR CHECK
◩ <EA Board> R65, R68, R70, R71, R72, R73, R74, R75, R84, R85, C36, C37, C39, C40, Q4, Q15, Q16, Q17, D17, D18, D19, D20, EA board complete
<EB Board> T1, EB board mount HV BLOCK

⊠ R78 . . . . VCC REG CHECK
◩ <GA Board> IC604, GA board complete
<DA Board> R61, R69, R70, R73, R74, R75, R76, R77, R78, D14, Q14, IC7, DA board complete

⊠ R43 . . . . BEAM CURRENT PROTECTOR CHECK
◩ <BB Board> R249, BB board complete
<EA Board> R32, R33, R34, R38, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, D23, C20, Q7, Q8, IC3, EA board complete

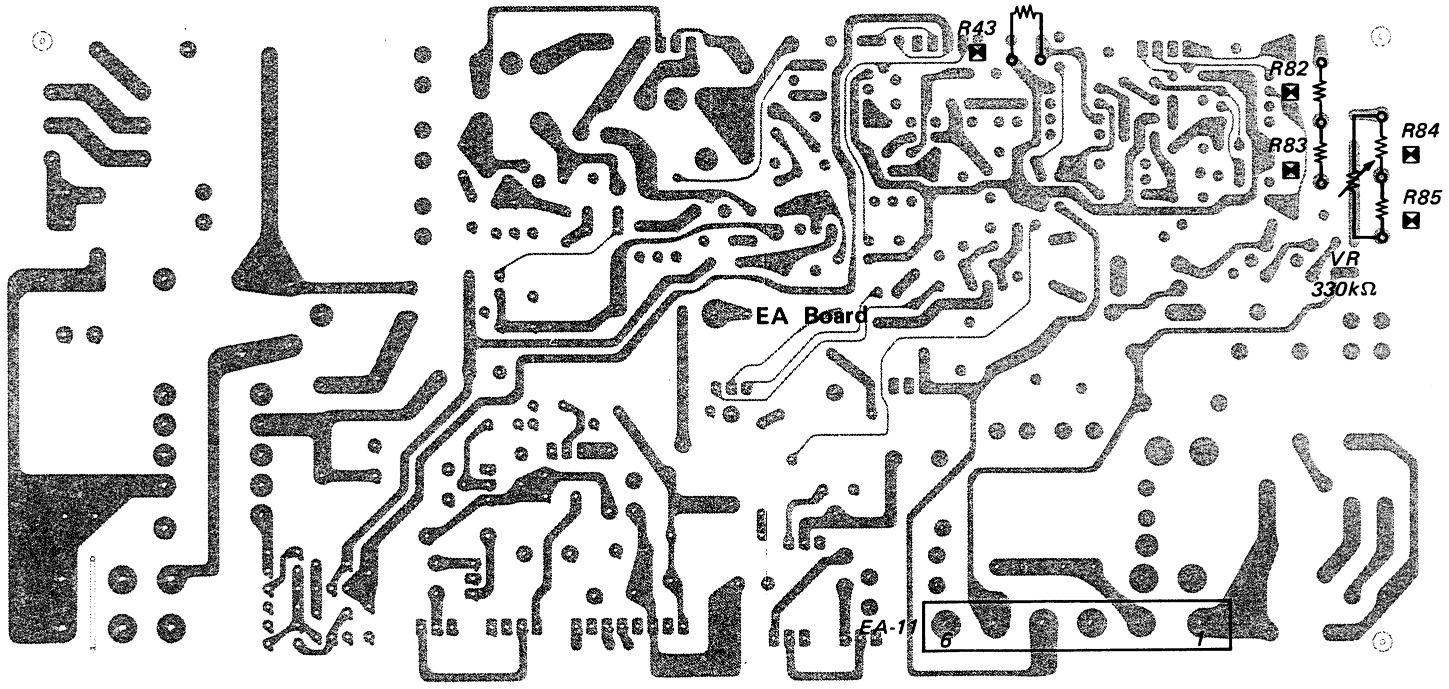
OVP CIRCUIT CHECK
◩ <GA Board> R612, IC602, GA board complete
<GB Board> R1, D9, GB board mount
<EA Board> R32, R33, R35, R86, R88, D24, Q7, Q8, Q19, EA board complete

BEAM CURRENT PROTECTOR Check (⊠ R43)

1. *Input monoscope (fH = 15.75KHz) signal.*
    - *AC 120V*
2. *Turn R.G.B BEAM SW ON.*
3. *Turn MAIN POWER SW and SUB POWER SW ON.*
4. *Turn the R.G.B G2 VRs (Focus Pack) BRIGHT VR and PICTURE VR each slowly and confirm that the ABL Current reading on the ammeter connected as shown in Fig. 1 is less than 1800μA, the PROTECTOR circuit opeates and the raster disappears. (Fig. 1)*

HV HOLD DOWN Cicuit Check (⊠ R82, R83)

1. *Confirm that the SUB POWER SW OFF.*
2. *Disconnect the EA-11 connector on the EA board and install the tool. (Fig. 1)*
3. *Connect a 330 kΩ semi-fixed VR between one side of R84 and one side of R85 on the EA board.*
4. *Connect the positive lead of the high tension meter to the HV. DC block and the negative lead to the ground lug beside the heat sink as shown in Fig.-2.*
5. *Receive a monoscope signal (15.75kHz) and turn the SUB POWER SW ON. (In this case, set BRIGHT (50%), PICTURE at MIN and input the monoscope signal.)*
6. *Set the G2 VR (Red, Green, Blue) at MIN and turn on the power.*
7. *When the voltage at G2 is gradually increased, the current flow may stop temporarily (near 1.1mA) due to ABL operation.*
8. *Set the PICTURE VR at MAX.*
9. *Adjust VR (330kΩ) for high voltage is less than 32.8KV, the HV HOLD DOWN circuit operates and the raster disappears.*



HV Regulator Circuit Check (⊠ R84, R85)

1. *Confirm that the MAIN POWER SW and SUB POWER SW to OFF.*
2. *Set PICTURE VR to 80% and BRIGHT VR to 50%.*
    - *R.G.B BEAM SW (S402, 403, 404): OFF*
    - *FOCUS pack R.G.B. G2: MIN*
3. *Receive a monoscope signal (15.75kHz and input 120V AC current.)*
4. *Remove the red anode lead from the HV. DC block, and connect the positive lead of the high tension meter to the HV. DC block and the negative lead to the ground lug beside the heat sink as shown in Fig.-2.*
5. *Confirm that high voltage is less than 31.30KV when the MAIN POWER SW and SUB POWER SW are turned ON.*

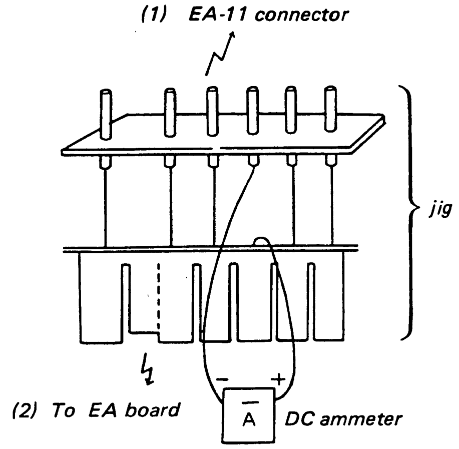


Fig. 1

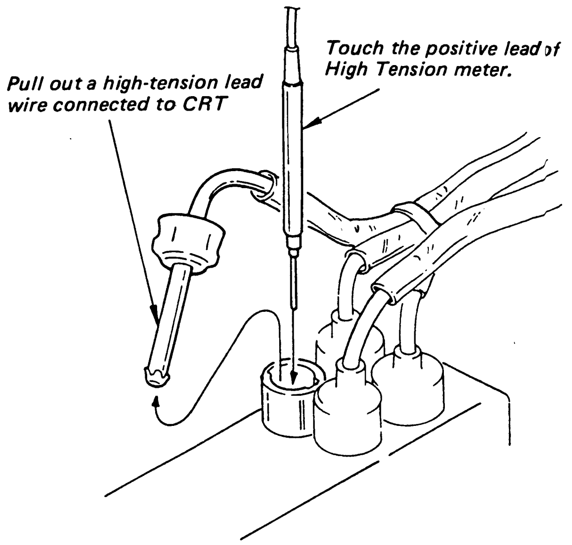

Pull out a high-tension lead wire connected to CRT
Touch the positive lead of High Tension meter.

Fig. 2

5-2. EA BOARD ADJUSTMENTS *– When a high tension meter is not available –*

- *When replacing the following components, make the HV HOLD DOWN, HV REG, Vcc REG, BEAM CURRENT PROTECTOR, and OVP CIRCUIT.*

⧗ R82, R83 ..... HV HOLD DOWN CHECK
◪ <EA Board> R23, R24, R28, R29, R31, R32, R33 R34, R38, R40, R82, R83, D8, D23, Q7, Q8, IC2, IC3, EA board complete
HV BLOK

⧗ R84, R85 ..... HV REGULATOR CHECK
◪ <EA Board> R65, R68, R70, R71, R72, R73, R74, R75, R84, R85, C36, C37, C39, C40, Q4, Q15, Q16, Q17, D17, D18, D19, D20, EA board complete
<EB Board> T1, EB board mount
HV BLOK

⧗ R78 .... VCC REG
◪ <GA Board> IC604, GA board complete
<DA Board> R61, R69, R70, R73, R74, R75, R76, R77, R78, D14, Q14, IC7, DA board complete

⧗ R43 .... BEAM CURRENT PROTECTOR CHECK
◪ <BB Board> R249, BB board complete
<EA Board> R32, R33, R34, R38, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, D23, C20, Q7, Q8, IC3, EA board complete

OVP CIRCUIT CHECK
◪ <GA Board> R612, IC602, GA board complete
<GB Board> R1, D9, GB board mount
<EA Board> R32, R33, R35, R86, R88, D24, Q7, Q8, Q19, EA board complete

BEAM CURRENT PROTECTOR Check (◪ R43)

1. *Input monoscope (fH = 15.75kHz) signal.*
   - *AC120V.*
2. *Disconnect the EA-11 connector on the EA board and install the tool shown in Fig. 1.*
3. *Turn R.G.B. BEAM SW ON.*
4. *Turn MAIN POWER SW and SUB POWER SW ON.*
5. *Turn the R.G.B G2 VRs (Focus Pack) BRIGHT VR and PICTURE VR each slowly and confirm that the ABL Current reading on the ammeter connected as shown in Fig. 1 is less than 1800μA, the PROTECTOR circuit operates and the raster dissappears. (Fig. 1)*

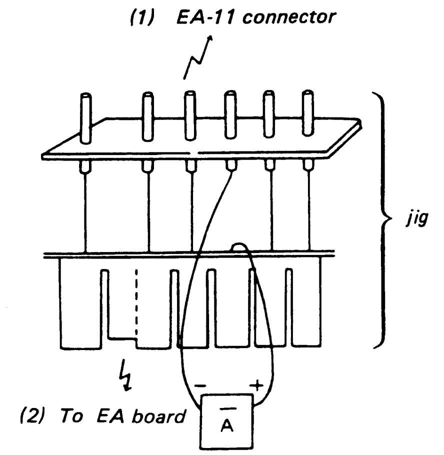


Fig. 1

HV HOLD DOWN Circuit Check (◪ R82, R83)

1. *Confirm that the POWER switch is OFF position.*
2. *Make the following network and connect a digital multimeter as shown in Fig. 2.*

* *Diode (D1) : V30N (8-719-901-19)*
* *Capacitors : (C1 to C6) 12000 F/1.2 KV, polyethylene*
* *Digital Multimeter : Withstand voltage of 1000V or more*

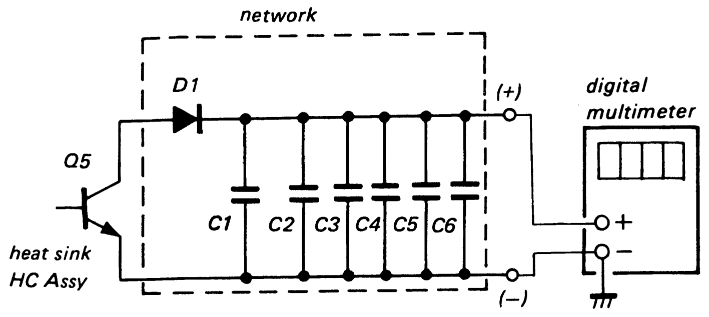
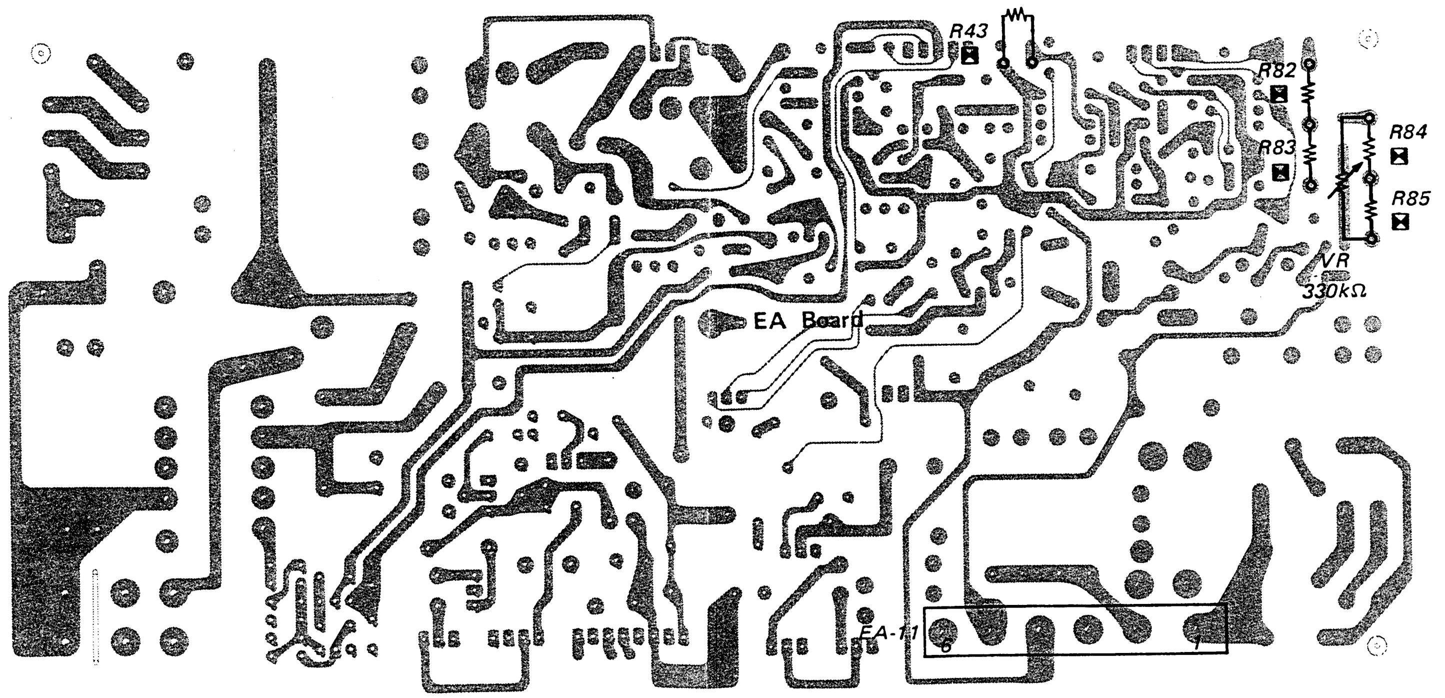


Fig. 2

3. *Feed in monoscope pattern from a signal generator and turn the BRIGHT and PICTURE controls for maximum beam current.*
4. *Turn the POWER switch ON and confirm that the power is automatically turned off just when the voltage on the digital multimeter is 885 ±11V dc by connecting a resistor across R82 and R83.*
   (HV HOLD DOWN circuit operates).
5. *If necessary, select R82 and R83 (1/6W carbon resistor) and repeat above steps.*
6. *Turn the POWER switch OFF.*
7. *Disconnect the resistor.*
8. *Perform the HV REG adjustment from step 4.*

HV Regulator Circuit Check (⧗ R84, R85)

1. *Confirm that the POWER switch is OFF position.*
2. *Make the following network and connect a digital multimeter as shown in Fig. 2.*
3. *Feed in monoscope pattern from a signal generator and turn the BRIGHT and PICTURE controls for maximum beam current.*
   (Be sure to synchronize the picture).
4. *Turn the POWER switch ON and confirm that the voltage on the digital multimeter is 843V ±10V dc.*
5. *If necessary, select R84 and R85 (1/6W carbon resistor) and repeat above steps.*
6. *Turn the POWER switch OFF and disconnect the network and the digital multimeter.*



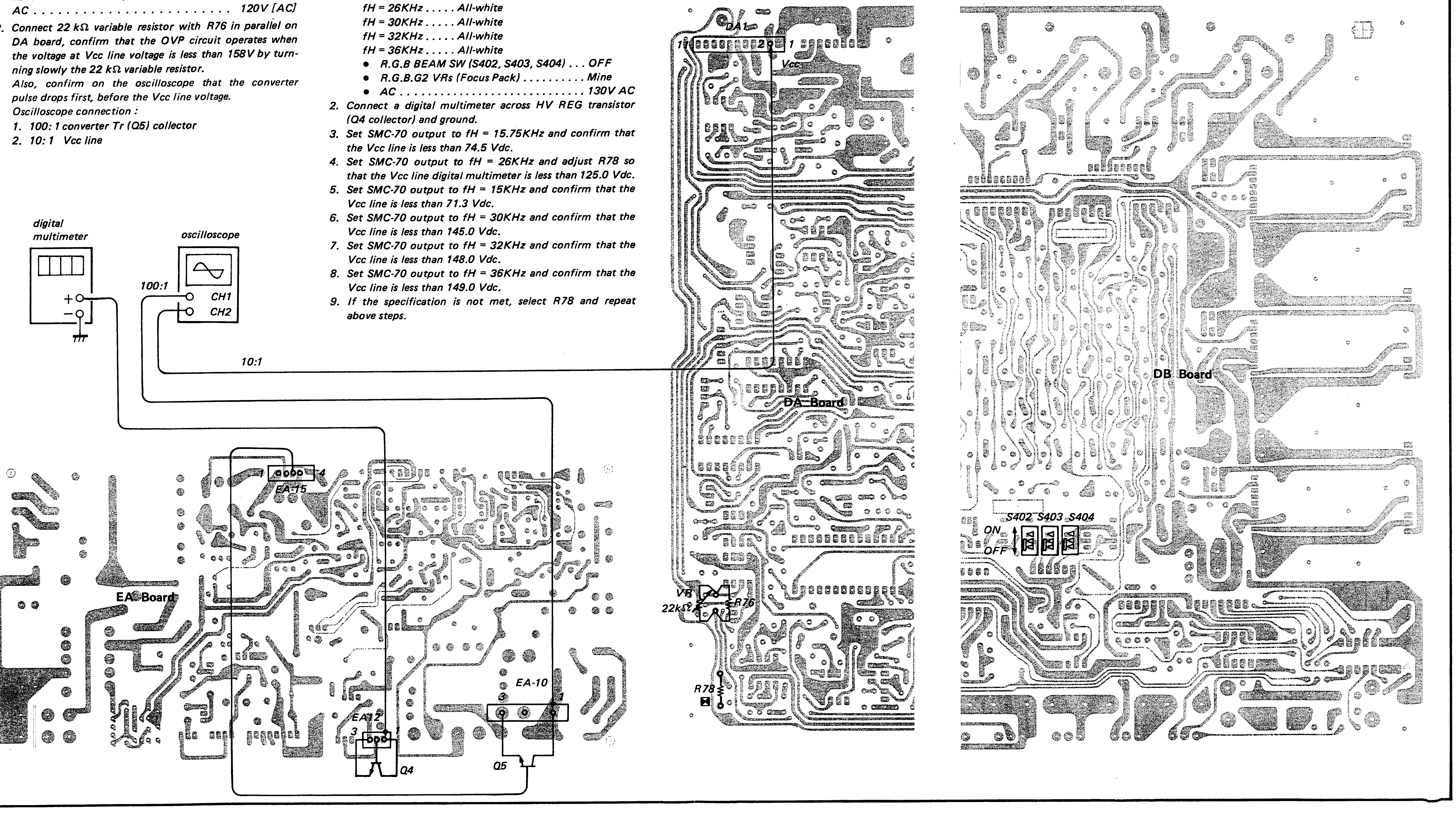
5-3. EA, DA AND DB BOARDS ADJUSTMENTS

OVP Circuit Check

1. *Receive an all-white signal (26kHz).*
   R.G.B. BEAM SW (S402, 403, 404) . . . . OFF
   R.G.B. G2 VR (Focus pack) . . . . MIN
   AC . . . . 120V [AC]
2. *Connect 22 kΩ variable resistor with R76 in parallel on DA board, confirm that the OVP circuit operates when the voltage at Vcc line voltage is less than 158V by turning slowly the 22 kΩ variable resistor.*
   Also, confirm on the oscilloscope that the converter pulse drops first, before the Vcc line voltage.
   Oscilloscope connection :
   1. *100: 1 converter Tr (Q5) collector*
   2. *10: 1 Vcc line*

VCC REG Check (▣ R78)

1. *Connect SMC-70 and RGB Input signal.*
   fH = 15.75KHz . . . monoscope
   fH = 15KHz . . . . . All-white
   fH = 26KHz . . . . . All-white
   fH = 30KHz . . . . . All-white
   fH = 32KHz . . . . . All-white
   fH = 36KHz . . . . . All-white
   - *R.G.B BEAM SW (S402, S403, S404) . . . OFF*
   - *R.G.B.G2 VRs (Focus Pack) . . . . Mine*
   - *AC . . . . 130V AC*
2. *Connect a digital multimeter across HV REG transistor (Q4 collector) and ground.*
3. *Set SMC-70 output to fH = 15.75KHz and confirm that the Vcc line is less than 74.5 Vdc.*
4. *Set SMC-70 output to fH = 26KHz and adjust R78 so that the Vcc line digital multimeter is less than 125.0 Vdc.*
5. *Set SMC-70 output to fH = 15KHz and confirm that the Vcc line is less than 71.3 Vdc.*
6. *Set SMC-70 output to fH = 30KHz and confirm that the Vcc line is less than 145.0 Vdc.*
7. *Set SMC-70 output to fH = 32KHz and confirm that the Vcc line is less than 148.0 Vdc.*
8. *Set SMC-70 output to fH = 36KHz and confirm that the Vcc line is less than 149.0 Vdc.*
9. *If the specification is not met, select R78 and repeat above steps.*



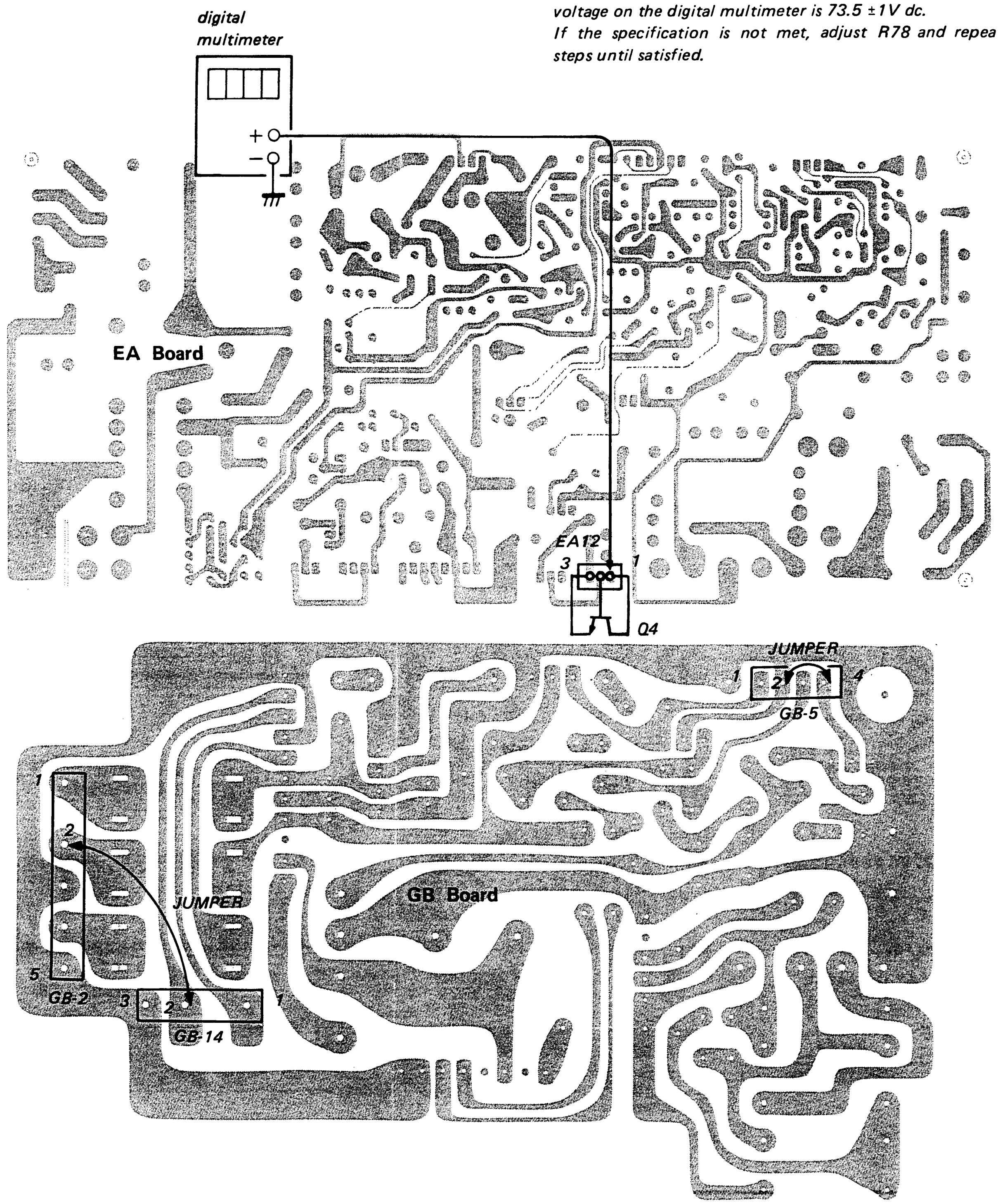
5-4. EA, DA AND DB BOARDS ADJUSTMENTS *– When a high tension meter is not available –*

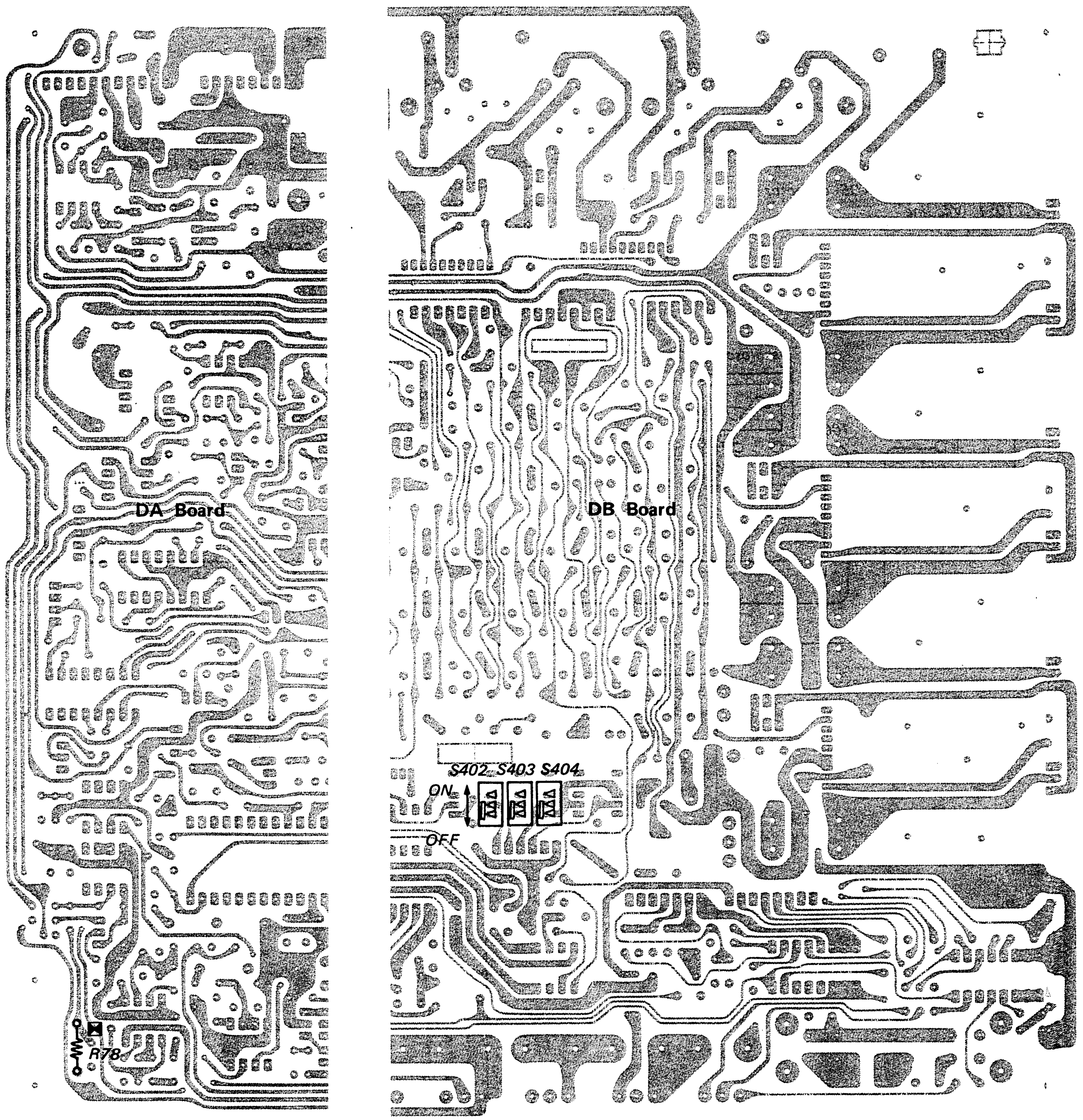
OVP Circuit Check

1. *Feed in a monoscope signal. (fH = 15.75KHz)*
   R.G. B BEAM SW (S402, 403, 404) . . . . . OFF
   R.G. B G2 VR (Focus pack) . . . . MIN
2. *Confirm that the main POWER switch is in OFF position, and shot-circuit between pins ② and ④ of GB-5 connector on the GB board.*
3. *Turn the main POWER switch ON, and confirm that the high tension drops when short-circuited between pin ② of GB-14 connector and pin ② of GB-2 connector.*

VCC REG Check (⊠ R78)

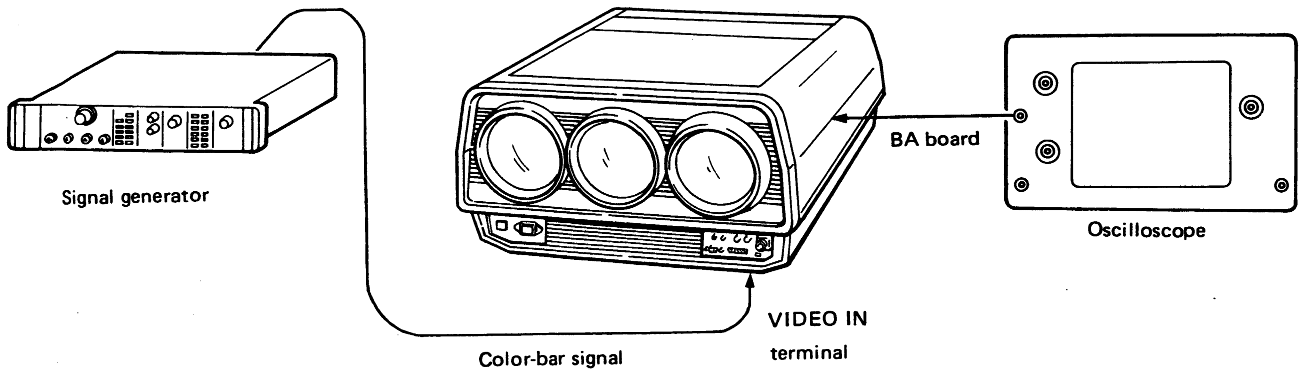
1. *Input signal.*
   Connect SMC-70 and RGB.
   fH = 15.75kHz . . . monoscope
   R.G.B BEAM SW (S402, 403, 404) . . . . OFF
   R.G.B G2 VR (Focus Pack) . . . . MIN
   AC . . . . 130V[AC]
2. *Connect a digital multimeter across HV REG transistor (Q4 collector) and ground.*
3. *Turn the power switch to ON and confirm that the voltage on the digital multimeter is 73.5 ±1V dc.*
   If the specification is not met, adjust R78 and repeat steps until satisfied.


digital
multimeter
+
−
EA Board
EA12
3
1
Q4
JUMPER
1
2
4
GB-5
1
2
5
GB-2
JUMPER
GB Board
3
2
1
GB-14


DA Board
R78
DB Board
S402 S403 S404
ON
OFF

SECTION 6
CIRCUIT ADJUSTMENTS

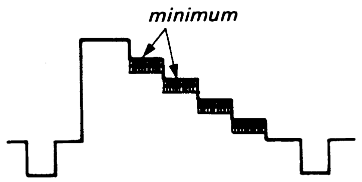
- **CONNECTION**



6-1. BA, AND BE BOARDS ADJUSTMENTS

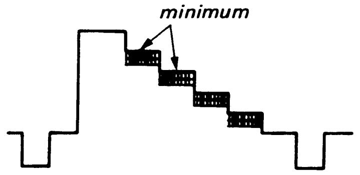
TRAP Adjustment (L111, L113)

1. *Input a PAL color bar signal.*
2. *Observe Q127 emitter on the oscilloscope.*
3. *Turn L111 (4.43MHz TRAP) core and adjust so that the 4.43MHz carrier component is minimum.*
4. *Input a SECAM color bar.*
5. *Observe Q131 emitter on the oscilloscope.*
6. *Turn L113 (4.25MHz TRAP) core and adjust so that the 4.25MHz carrier component is minimum.*



1H COMB Adjustment (L102, RV101)

1. *Input an NTSC color bar signal.*
2. *Observe Q111 emitter on the oscilloscope.*
3. *White tracking with BA board L102 and RV101, adjust the 3.58MHz carrier component so that it is minimum.*



VIDEO AGC (RV1 RV2)

1. *Input a monoscope siganl.*
2. *Turn the AGC SW (S702) off and check that Q11 emitter output level is 1.0 ± 0.2Vp-p.*
3. *Turn AGC SW (S702) on .*
4. *Turn SYNC AGC VR (RV1) counterclockwise and maximize Q11 emitter output level.*
5. *Turn PEAK AGC VR (RV2) and set Q11 emitter output level to 1.1 ± 0.1Vp-p.*
6. *Turn SYNC AGC VR (RV1) slowly and set at the point where Q11 output starts to go down.*
7. *Adjust Q11 emitter output level to 1.0 ± 0.05Vp-p with PEAK AGC VR (RV2).*

PAL Color Sync Fine Adjustment (RV305, RV306)

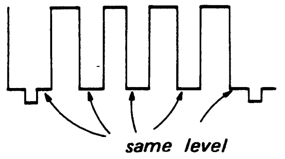
1. *Input a PAL color bar.*
2. *Connect 100k resistor between IC301 Pin ⑬ and ground and release killer.*
3. *Connect 10uF/16V electrolytic capacitor between IC301 pin ⑯ and ground and cut the burst signal.*
4. *Connect IC3 pin ② to the +12V line via a 2.2k resistor. (In this case, the state of IC3 pin ⑨ becomes "Low" mode; PAL mode is available.)*
5. *Adjust RV305 (APC-2 4.43MHz) to get color sync.*
6. *Remove the 2.2k resistor in step 4.*
7. *Input an NTSC color bar.*
8. *Ground Q23 base momentarily and get 3.58MHz mode. (In this case, the state of IC3 pin ⑨ becomes "HIGH" mode.)*
9. *Adjust RV306 (APC-1 3.58MHz) to get color sync.*

KILLER Adjustment (RV304)

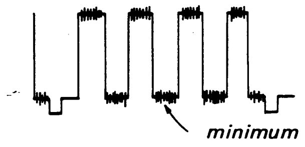
1. *Set the TEST SW on the rear panel to "ON".*
2. *Connect 10µF/16V electrolytic capacitor between IC301 pin ⑬ and ground.*
3. *Adjust RV304 for voltage value of IC301 pin ⑬ is 8.0± 0.05V dc.*

Color Balance Adjustment L401, L402

1. *Input a SECAM color bar signal. Connect the oscilloscope to Q401 emitter (B OUT) and adjust L402 so that the waveform is the same level.*
2. *Connect the oscilloscope to Q403 emitter (R OUT) and adjust L401 so that the waveform is the same level.*

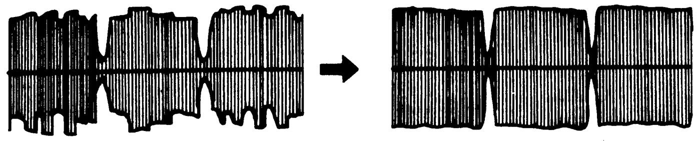


3. *Turn S401 on, connect the oscilloscope to Q401 and Q403 emitters, and adjust with L401 and L403 so that the color component leak in the white and black level portions is minimum.*



SECAM COLOR L403, T401

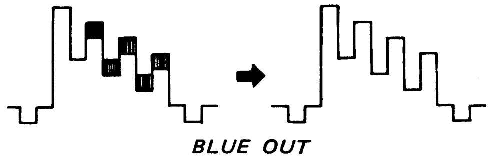
1. *Bell Filter Adjustment*
   (1) *Input a SECAM color bar signal.*
   (2) *Observe IC401 pin ⑰ and adjust T401 so that the waveform level is uniform.*



2. *ID Adjustment*
   (1) *Input a SECAM color bar.*
   (2) *Adjust L403 so that IC401 pin ㉕ DC level is maximum.*

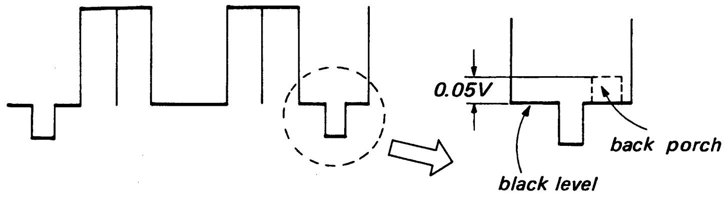
PAL MATRIX RV303, T302

1. *Input a PAL color bar signal.*
   Set the COLOR VR to the mechanical center.
2. *With observing the waveform of the Q401 emitter (BLUE OUT), set variable range of the waveform to be minimum by adjusting RV303 and T302.*



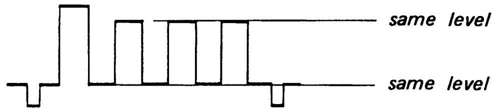
Back porch Level Adjustment (RV401, 402, 403)

1. *Input a color bar signal (burst OFF signal).*
2. *Connect the oscilloscope to the RED (Q403 emitter), GREEN (Q402 emitter) and BLUE (Q401 emitter) measurement points and adjust RV401, 402 and 403 so that the DC levels of the black portion and back porch portion of the signal match.*



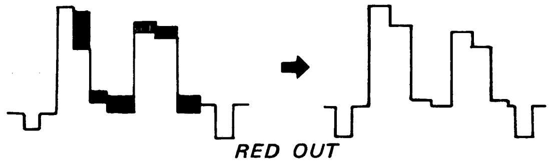
SUB COLOR RV302, RV709

1. *Input a SECAM color bar signal and set the color VR to mechanical center.*
2. *Connect the oscilloscope to Q401 emitter (B OUT) and adjust RV709 so that the waveform is as shown in the diagram. Also, adjust RV302 so that the waveform is as shown in the diagram when a PAL color bar is input.*



SUB HUE: ANTI PAL RV303, RV708

1. *Input a special color bar signal. (PHILIPS COLOR PATTERN)*
2. *Set the color VR and HUE VR to mechanical center.*
3. *Observe the Q401 emitter (BLUE OUT) and Q403 emitter (RED OUT) waveforms, and adjust RV708 and RV303 so that the ANTI-PAL signal chroma component is minimum.*
4. *Input an NTSC signal and confirm that there is sufficient variable range when the HUE VR is turned.*



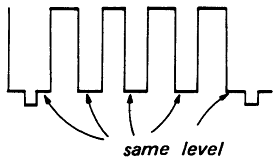
SUB PICTURE RV301

1. *Input a PAL color bar signal.*
2. *Adjust RV301 so that Q402 emitter (G OUT) output level is 0.85 ± 0.05Vp-p.*

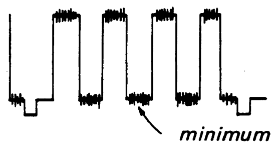
Note: Be sure to perform this adjustment after back porch level adjustment.

Color Balance Adjustment L401, L402

1. *Input a SECAM color bar signal. Connect the oscilloscope to Q401 emitter (B OUT) and adjust L402 so that the waveform is the same level.*
2. *Connect the oscilloscope to Q403 emitter (R OUT) and adjust L401 so that the waveform is the same level.*

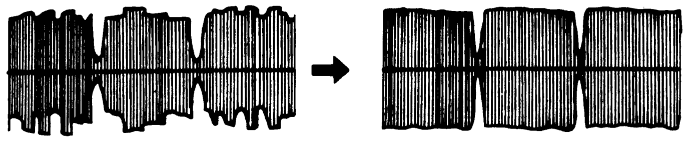


3. *Turn S401 on, connect the oscilloscope to Q401 and Q403 emitters, and adjust with L401 and L403 so that the color component leak in the white and black level portions is minimum.*



SECAM COLOR L403, T401

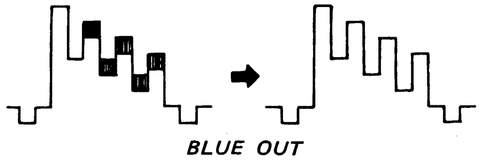
1. *Bell Filter Adjustment*
   - *(1) Input a SECAM color bar signal.*
   - *(2) Observe IC401 pin ⑰ and adjust T401 so that the waveform level is uniform.*



2. *ID Adjustment*
   - *(1) Input a SECAM color bar.*
   - *(2) Adjust L403 so that IC401 pin ㉕ DC level is maximum.*

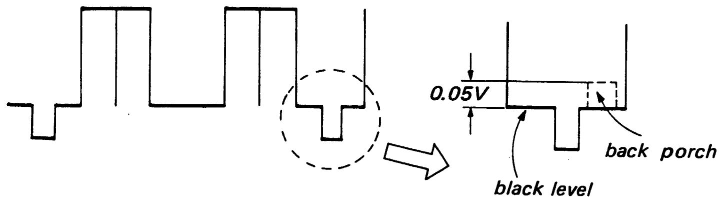
PAL MATRIX RV303, T302

1. *Input a PAL color bar signal. Set the COLOR VR to the mechanical center.*
2. *With observing the waveform of the Q401 emitter (BLUE OUT), set variable range of the waveform to be minimum by adjusting RV303 and T302.*



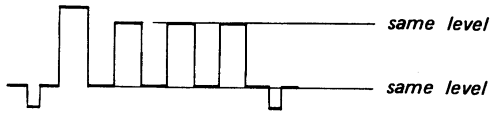
Back porch Level Adjustment (RV401, 402, 403)

1. *Input a color bar signal (burst OFF signal).*
2. *Connect the oscilloscope to the RED (Q403 emitter), GREEN (Q402 emitter) and BLUE (Q401 emitter) measurement points and adjust RV401, 402 and 403 so that the DC levels of the black portion and back porch portion of the signal match.*



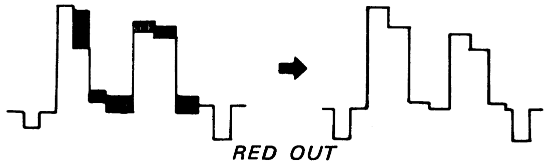
SUB COLOR RV302, RV709

1. *Input a SECAM color bar signal and set the color VR to mechanical center.*
2. *Connect the oscilloscope to Q401 emitter (B OUT) and adjust RV709 so that the waveform is as shown in the diagram. Also, adjust RV302 so that the waveform is as shown in the diagram when a PAL color bar is input.*



SUB HUE: ANTI PAL RV303, RV708

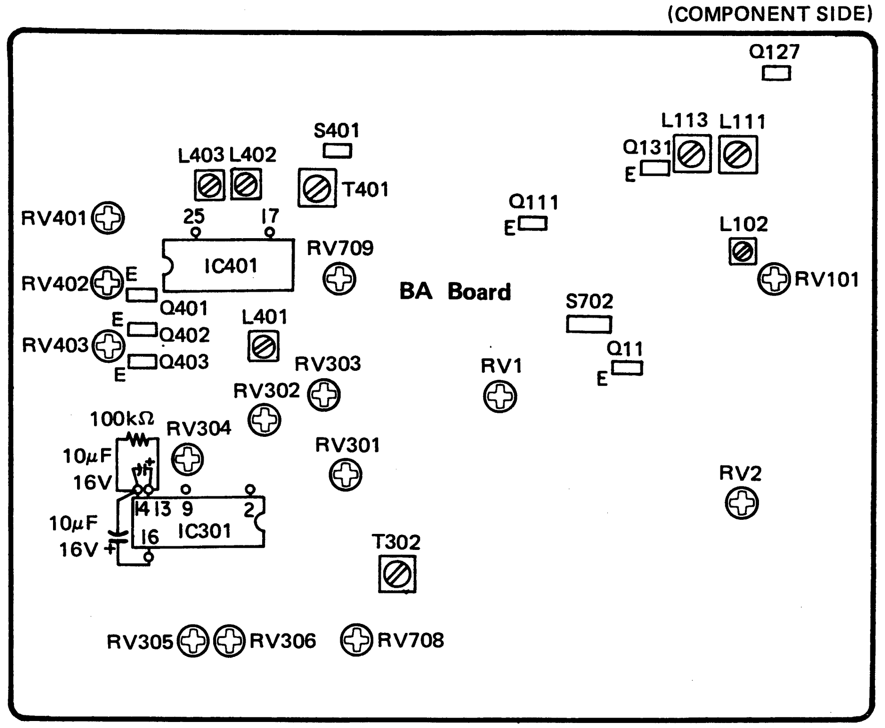
1. *Input a special color bar signal. (PHILIPS COLOR PATTERN)*
2. *Set the color VR and HUE VR to mechanical center.*
3. *Observe the Q401 emitter (BLUE OUT) and Q403 emitter (RED OUT) waveforms, and adjust RV708 and RV303 so that the ANTI-PAL signal chroma component is minimum.*
4. *Input an NTSC signal and confirm that there is sufficient variable range when the HUE VR is turned.*

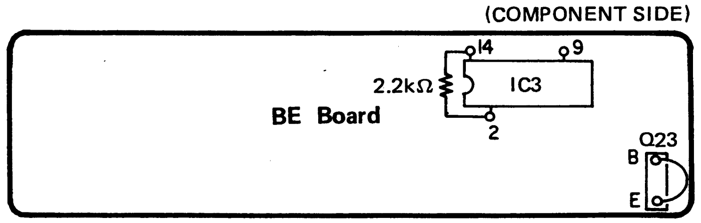


SUB PICTURE RV301

1. *Input a PAL color bar signal.*
2. *Adjust RV301 so that Q402 emitter (G OUT) output level is 0.85 ± 0.05Vp-p.*

Note: Be sure to perform this adjustment after back porch level adjustment.


(COMPONENT SIDE)
BA Board
Q127
S401
L403 L402
T401
L113 L111
Q131
E
Q111
E
RV401
25
17
IC401
RV709
L102
RV101
RV402
E
Q401
E
Q402
RV403
Q403
E
L401
S702
Q11
E
RV303
RV1
RV302
100kΩ
RV304
10μF
16V
14 13 9 2
16 IC301
10μF
16V
RV301
RV2
T302
RV305
RV306
RV708


(COMPONENT SIDE)
BE Board
2.2kΩ
14
9
IC3
2
Q23
B
E

NOTE: Q23 between Base and Collector momentarily shortcircuit.

6-2. DA BOARD ADJUSTMENTS

Multiscan Control Section

1. *Preparations*
   Connect dummy power supply to DA-1, and digital voltmeter and dummy load to Vcc line.
   Digital voltmeter to TP8.
   Frequency counter to H. Pulse line.
   Connect EA board to DA-13 and DY to DA-14 ~ 16.
   Notes :
   1) Use Y-Z power supply for dummy.
   2) Dummy load is 350Ω/50W.
2. *Input Signal*
   VIDEO monoscope (fH = 15.75kHz) and SMC-70 (fH = 15kHz, fH = 30kHz)

F-V Conversion Adjustment

1) Set RGB/VIDEO SW to RGB and set SMC-70 output to fH = 30kHz. At this time, choose R30 and 31 so that TP-8 digital voltmeter reading is 6.05 ± 0.05V.

Note: SMC-70
Press SHIFT + F.5 at the same time.

2) Set SMC-70 output to fH = 15kHz and confirm that TP-8 reading is 2.99 ± 0.02V.

Note: SMC-70
Press SHIFT + F.2 at the same time.

Vcc Adjustment

1) Set SMC-70 output to fH = 30kHz and adjust R78 so that the 145.0V dc.

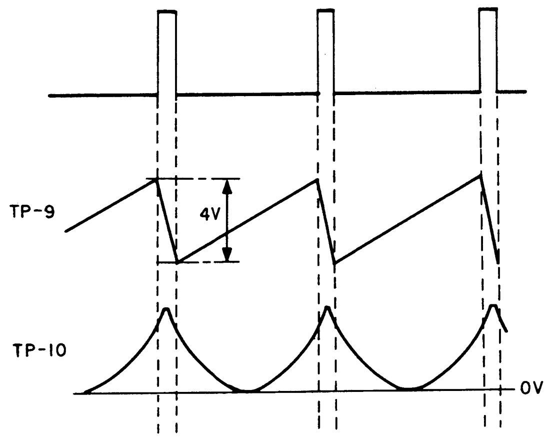
2) Set SMC-70 output to fH = 15kHz and confirm that the Vcc line reading is less than 71.3V dc.
If the specification is not met, adjust R78 and repeat steps 1, and 2, until satisfied.

AFC Adjustment

1. *RGB Mode AFC Adjustment*
   1) Connect a 10µF/16V chemical capacitor between IC1 pin ① and GND.
   Turn RV-1 fully to the left.
   2) Set SMC-70 output to fH = 30kHz and adjust RV2 so that the frequency counter reading is 30.059kHz.
   3) Set SMC-70 output to fH = 15kHz and adjust RV1 so that the frequency counter reading is 15.030kHz.
2. *VIDEO Mode AFC Adjustment*
   1) Set RGB/VIDEO SW to VIDEO and adjust R92.93 so that the frequency counter reading is 15.734kHz.
   2) Confirm that Vcc line digital voltmeter reading is less than 73.5V dc.

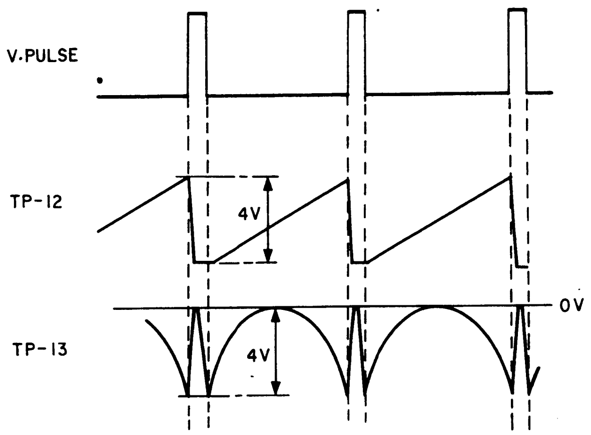
H. SAW, H. PARA Check

1. *Observe DA-8 H. Pulse and TP-9 H. SAW on the oscilloscope.*
   Confirm that the phases of the two waveforms match and that the amplitude of TP-9 waveform is 4Vp-p ± 0.5V by VIDEO MODE.
2. *Observe TP-10 instead of TP-9 and compare the phase with H. Pulse. The amplitude at this time should be more than 3V by VIDEO MODE.*



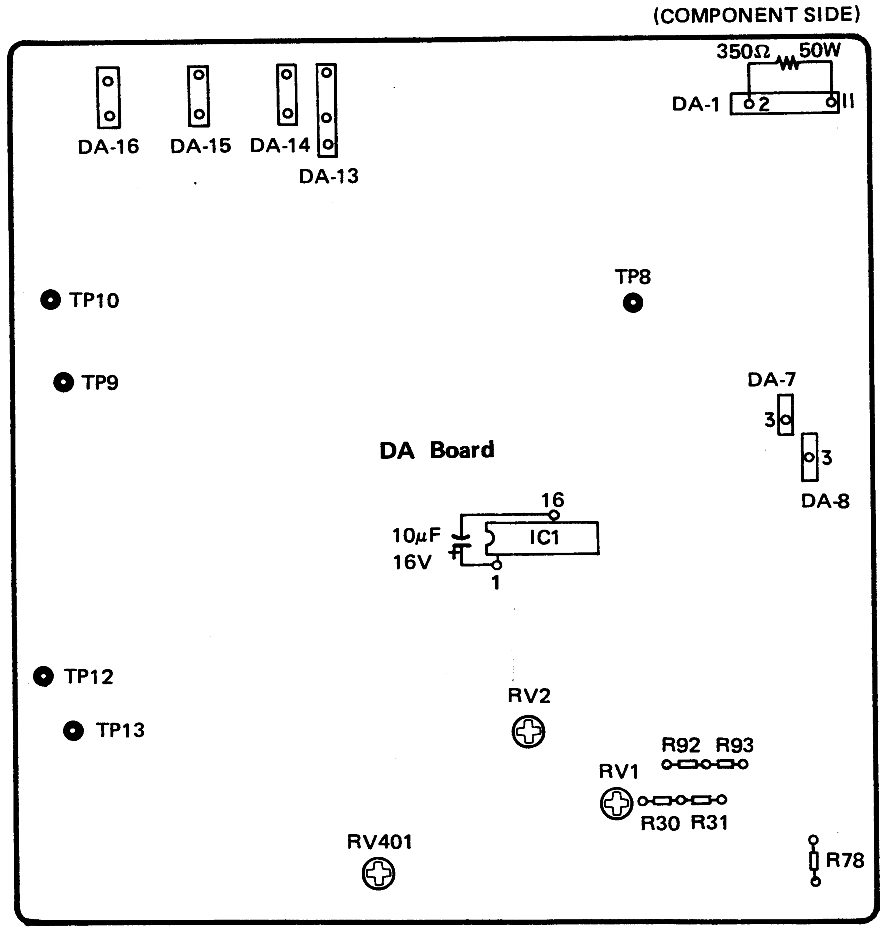
V. SAW, V PARA Check

1. *Observe DA-7 V. Pulse and TP-12 V. SAW on the oscilloscope.*
   Confirm that the phases of the two waveforms match and that the amplitude of TP-12 Waveform is 4Vp-p ± 0.5V by VIDEO MODE.
2. *Observe TP-13 instead of TP-12 and confirm that the phase matches that of V. Pulse, and that the amplitude is 4Vp-p ± 0.5V by VIDEO MODE.*



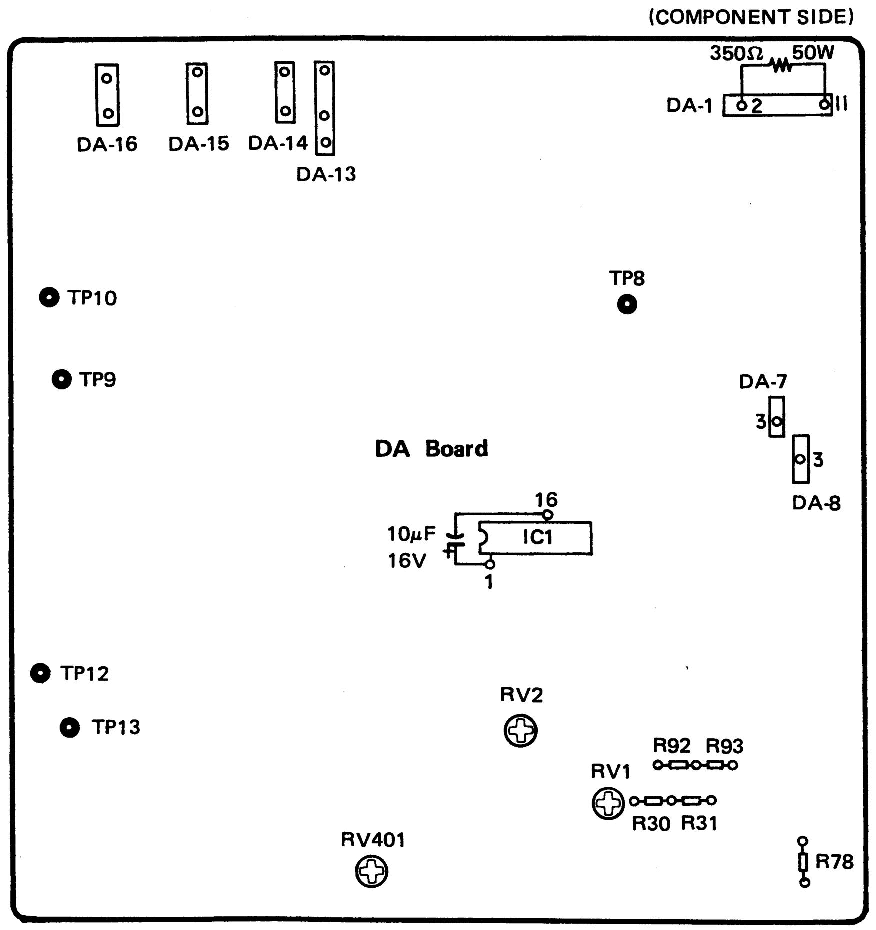
Interlace Adjustment

1. *Receive an NTSC monoscope signal.*
2. *Adjust for optimum condition with DA board V.INTER VR (RV401).*



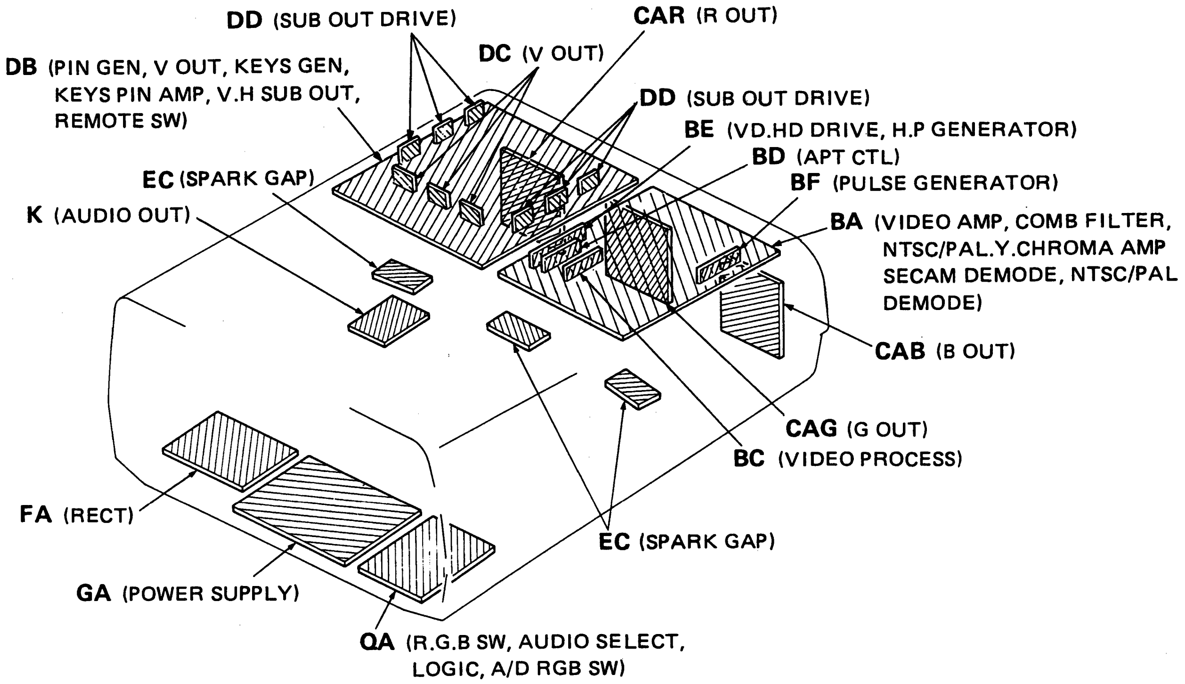
Interlace Adjustment

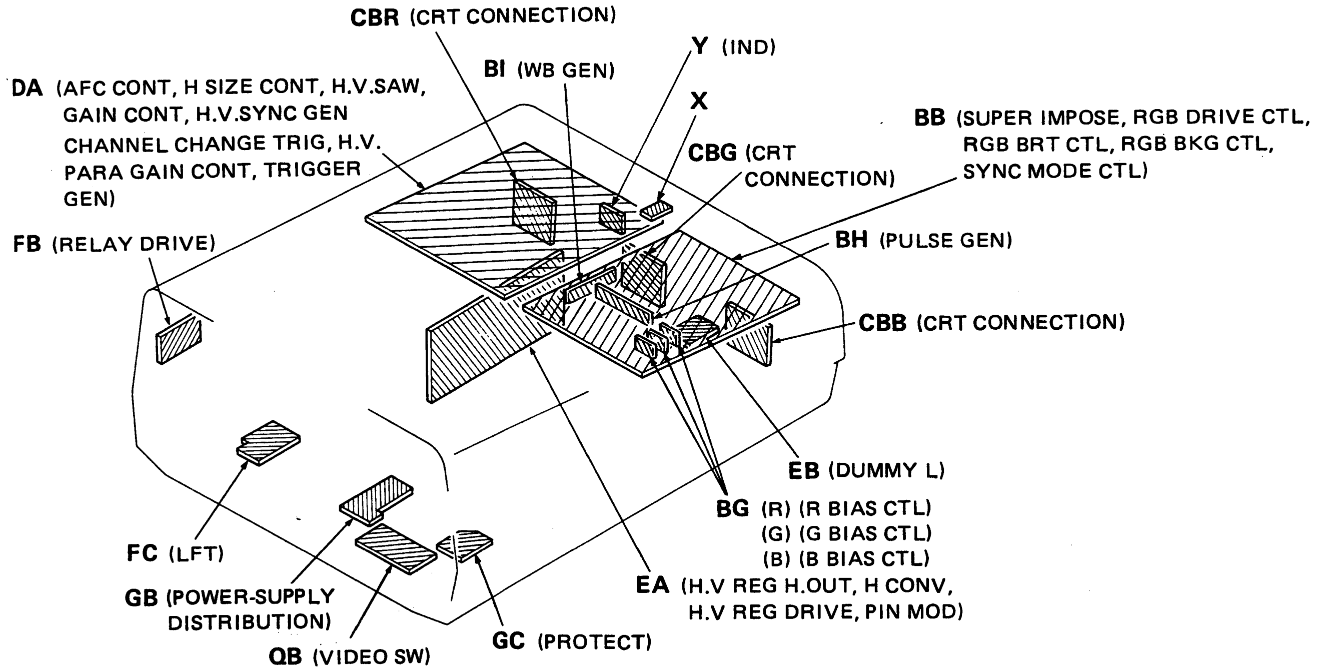
1. *Receive an NTSC monoscope signal.*
2. *Adjust for optimum condition with DA board V.INTER VR (RV401).*


(COMPONENT SIDE)
350Ω 50W
DA-1
2
11
DA-16
DA-15
DA-14
DA-13
TP10
TP9
TP8
DA-7
3
3
DA-8
DA Board
16
10μF
16V
IC1
1
TP12
TP13
RV2
R92 R93
RV1
R30 R31
RV401
R78

SECTION 7
DIAGRAMS

7-1. CIRCUIT BOARDS LOCATION


DD (SUB OUT DRIVE)
CAR (R OUT)
DB (PIN GEN, V OUT, KEYS GEN, KEYS PIN AMP, V.H SUB OUT, REMOTE SW)
DC (V OUT)
DD (SUB OUT DRIVE)
BE (VD.HD DRIVE, H.P GENERATOR)
BD (APT CTL)
EC (SPARK GAP)
BF (PULSE GENERATOR)
K (AUDIO OUT)
BA (VIDEO AMP, COMB FILTER, NTSC/PAL.Y.CHROMA AMP SECAM DEMODE, NTSC/PAL DEMODE)
CAB (B OUT)
CAG (G OUT)
BC (VIDEO PROCESS)
FA (RECT)
EC (SPARK GAP)
GA (POWER SUPPLY)
QA (R.G.B SW, AUDIO SELECT, LOGIC, A/D RGB SW)


CBR (CRT CONNECTION)
Y (IND)
DA (AFC CONT, H SIZE CONT, H.V.SAW, GAIN CONT, H.V.SYNC GEN CHANNEL CHANGE TRIG, H.V. PARA GAIN CONT, TRIGGER GEN)
BI (WB GEN)
X
BB (SUPER IMPOSE, RGB DRIVE CTL, RGB BRT CTL, RGB BKG CTL, SYNC MODE CTL)
CBG (CRT CONNECTION)
FB (RELAY DRIVE)
BH (PULSE GEN)
CBB (CRT CONNECTION)
EB (DUMMY L)
BG (R) (R BIAS CTL)
(G) (G BIAS CTL)
(B) (B BIAS CTL)
FC (LFT)
EA (H.V REG H.OUT, H CONV, H.V REG DRIVE, PIN MOD)
GB (POWER-SUPPLY DISTRIBUTION)
GC (PROTECT)
QB (VIDEO SW)

7-2. QUICK REFERENCE

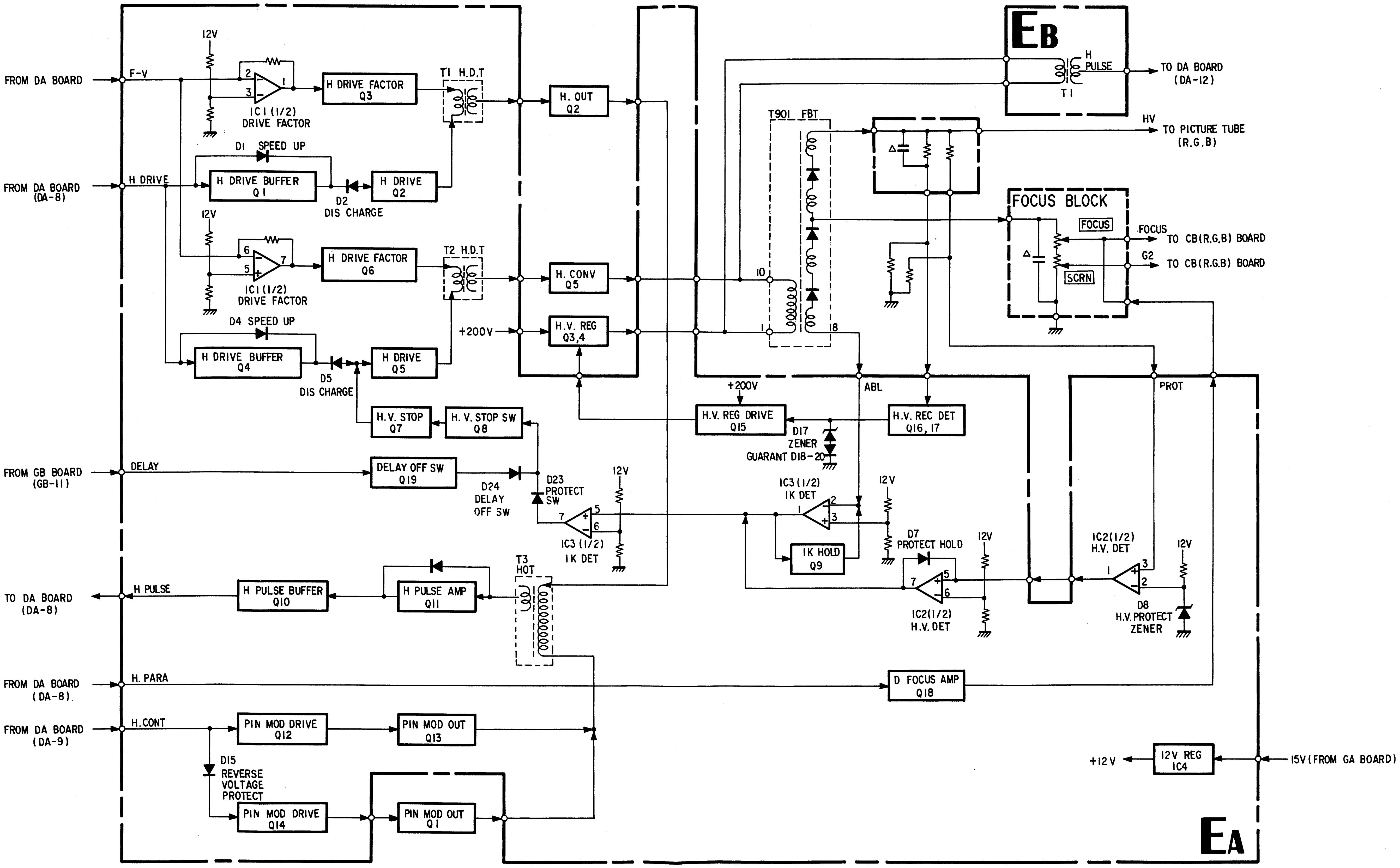
BOARD / SECTION	BA	BB	BC	BD	BE	BF	BG	BH	BI	CAR	CAG
CIRCUIT DESCRIPTION	–	–	–	–	–	–	–	–	–	–	–
ADJUSTMENTS	43	–	–	–	43	–	–	–	–	–	–
BLOCK DIAGRAM	59	62	59, 60	61	61	59	62	62	63	63	63
MOUNTING DIAGRAM	97	107	99	99	100	100	110	110	110	115	115
SCHEMATIC DIAGRAM	94	102	94	95	95	95	102	104	105	111	112
ELECTRICAL PARTS LIST	149	157	155	156	156	157	165	166	166	186	188

BOARD / SECTION	CAB	CBR	CBG	CBB	DA	DB	DC	DD	EA	EB	EC
CIRCUIT DESCRIPTION	–	–	–	–	29	–	–	–	29	–	–
ADJUSTMENTS	–	–	–	–	39, 42 46	39, 42	–	–	35, 39 37, 41	–	–
BLOCK DIAGRAM	63	64	64	64	65	68	70	70	51	52	–
MOUNTING DIAGRAM	116	116	117	117	121	129	130	130	85	86	87
SCHEMATIC DIAGRAM	114	112	113	114	118	125	125	125 126 127	82	83	84
ELECTRICAL PARTS LIST	189	190	190	191	167	175	179	179	191	191	191

BOARD / SECTION	FA	FB	FC	GA	GB	K	QA	QB	X	Y	GC
CIRCUIT DESCRIPTION	–	–	–	–	–	–	–	–	–	–	–
ADJUSTMENTS	–	–	–	–	41	–	–	–	–	–	–
BLOCK DIAGRAM	53	53	53	53	55	57	58	58	68	65	55
MOUNTING DIAGRAM	80	81	81	79	81	130	91	92	130	124	81
SCHEMATIC DIAGRAM	76	76	76	78	78	128	89	88	125	118	78
ELECTRICAL PARTS LIST	180	180	180	185	184	194	181	181	194	194	185

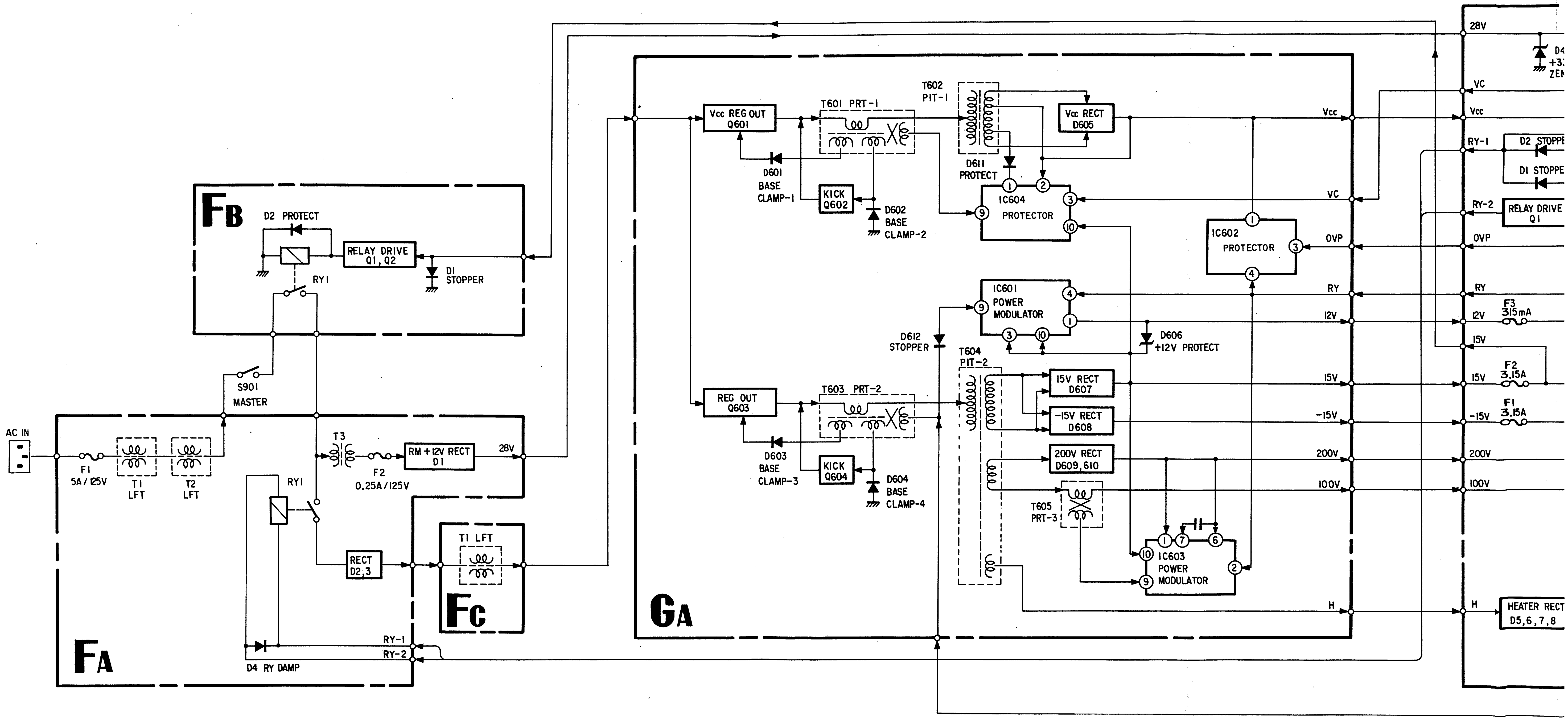
7-3. BLOCK DIAGRAMS

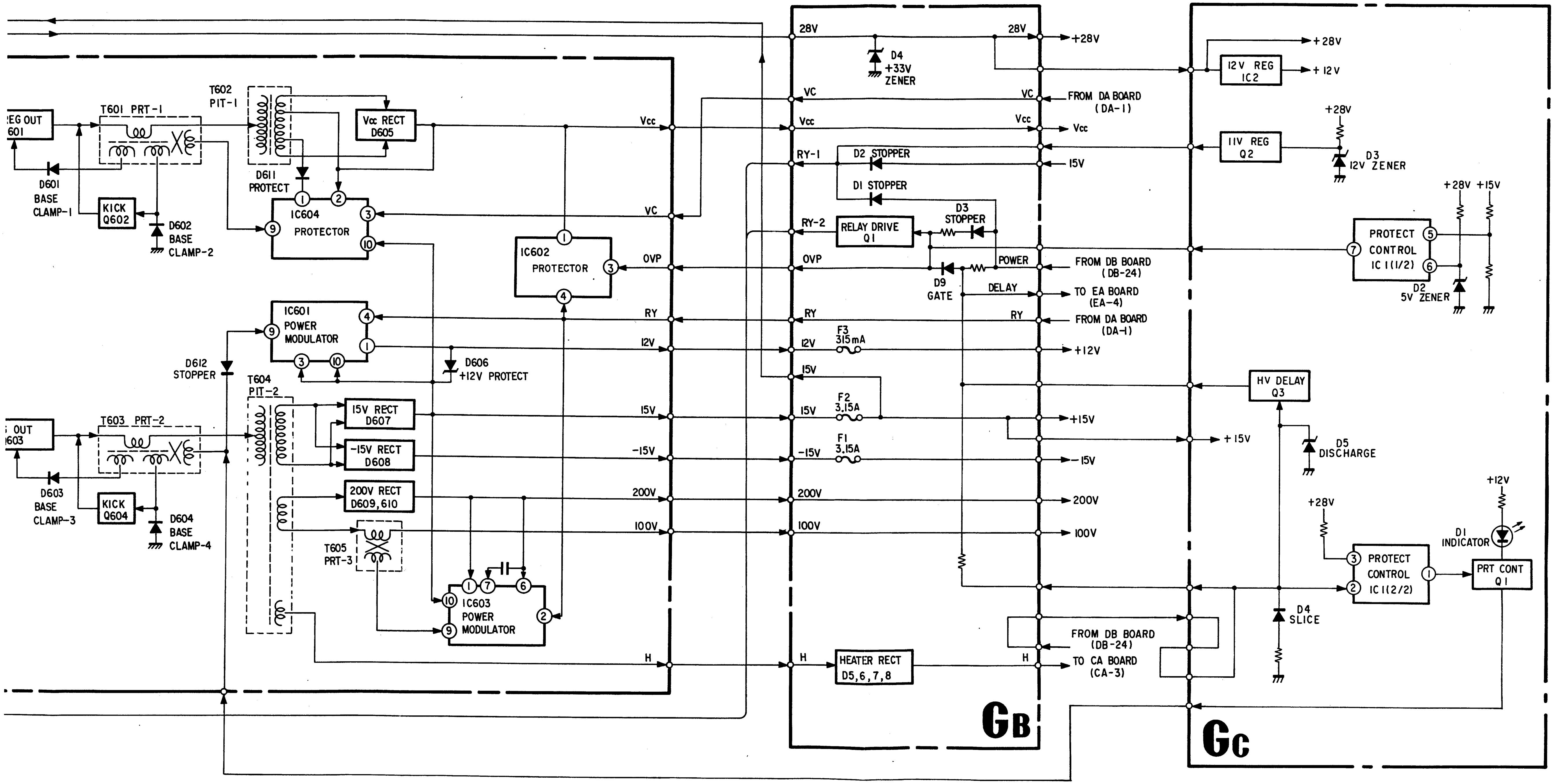
EA, EB BOARDS BLOCK DIAGRAM


FROM DA BOARD
F-V
12V
IC1 (1/2) DRIVE FACTOR
H DRIVE FACTOR Q3
T1 H.D.T
H. OUT Q2
D1 SPEED UP
FROM DA BOARD (DA-8)
H DRIVE
H DRIVE BUFFER Q1
D2 DIS CHARGE
H DRIVE Q2
IC1 (1/2) DRIVE FACTOR
H DRIVE FACTOR Q6
T2 H.D.T
H. CONV Q5
D4 SPEED UP
+200V
H.V. REG Q3,4
H DRIVE BUFFER Q4
D5 DIS CHARGE
H DRIVE Q5
H.V. STOP Q7
H. V. STOP SW Q8
FROM GB BOARD (GB-11)
DELAY
DELAY OFF SW Q19
D24 DELAY OFF SW
D23 PROTECT SW
IC3 (1/2) IK DET
T3 HOT
TO DA BOARD (DA-8)
H PULSE
H PULSE BUFFER Q10
H PULSE AMP Q11
FROM DA BOARD (DA-8)
H. PARA
FROM DA BOARD (DA-9)
H.CONT
PIN MOD DRIVE Q12
PIN MOD OUT Q13
D15 REVERSE VOLTAGE PROTECT
PIN MOD DRIVE Q14
PIN MOD OUT Q1
EB
H PULSE
T1
TO DA BOARD (DA-12)
HV
TO PICTURE TUBE (R,G,B)
T901 FBT
FOCUS BLOCK
FOCUS
SCRN
FOCUS TO CB(R,G,B) BOARD
G2 TO CB(R,G,B) BOARD
+200V
ABL
PROT
H.V. REG DRIVE Q15
D17 ZENER
GUARANT D18-20
H.V. REC DET Q16, 17
IC3 (1/2) IK DET
IK HOLD Q9
D7 PROTECT HOLD
IC2 (1/2) H.V. DET
IC2 (1/2) H.V. DET
D8 H.V. PROTECT ZENER
D FOCUS AMP Q18
+12V
12V REG IC4
15V (FROM GA BOARD)
EA

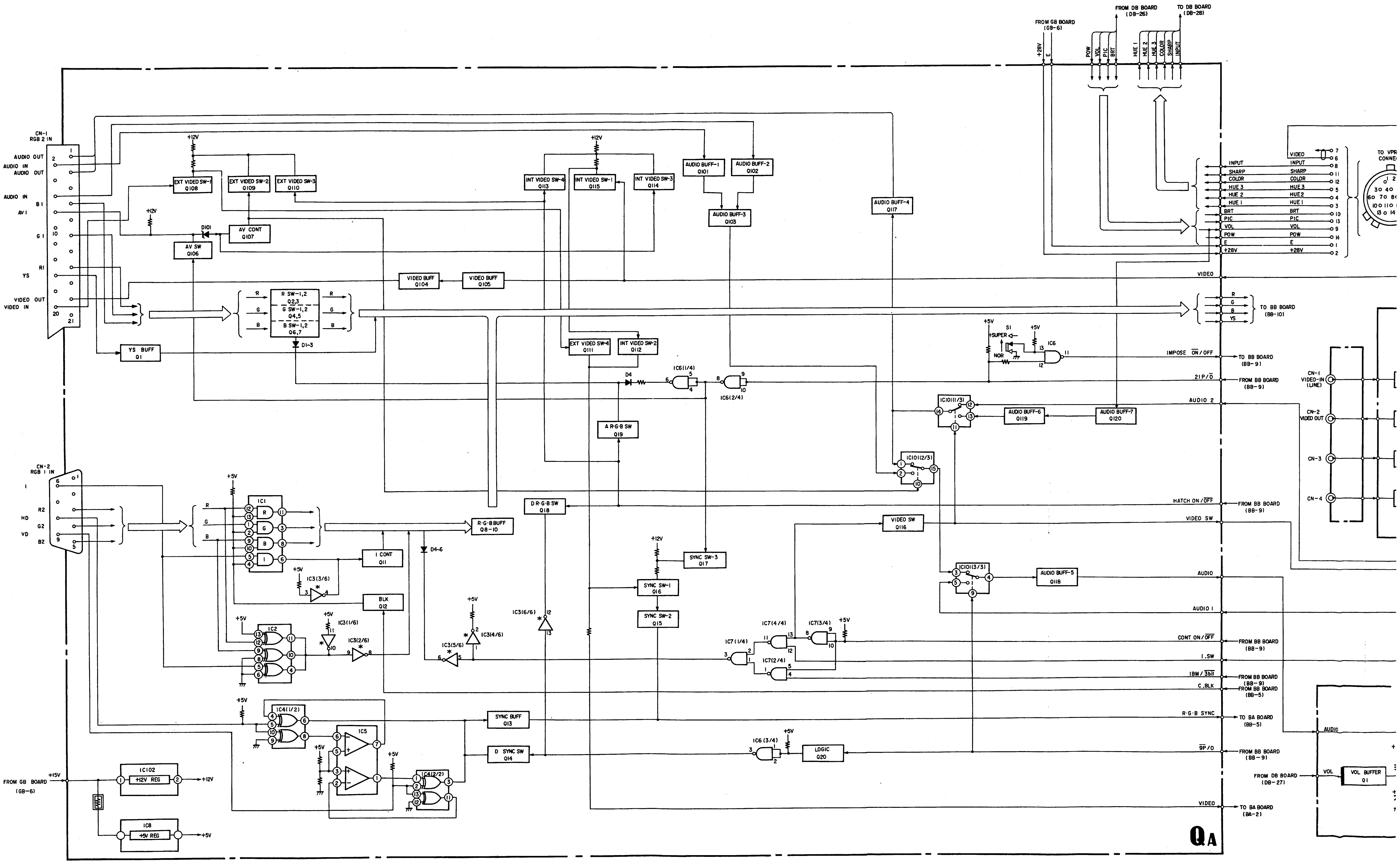
V03234 / Druck 10

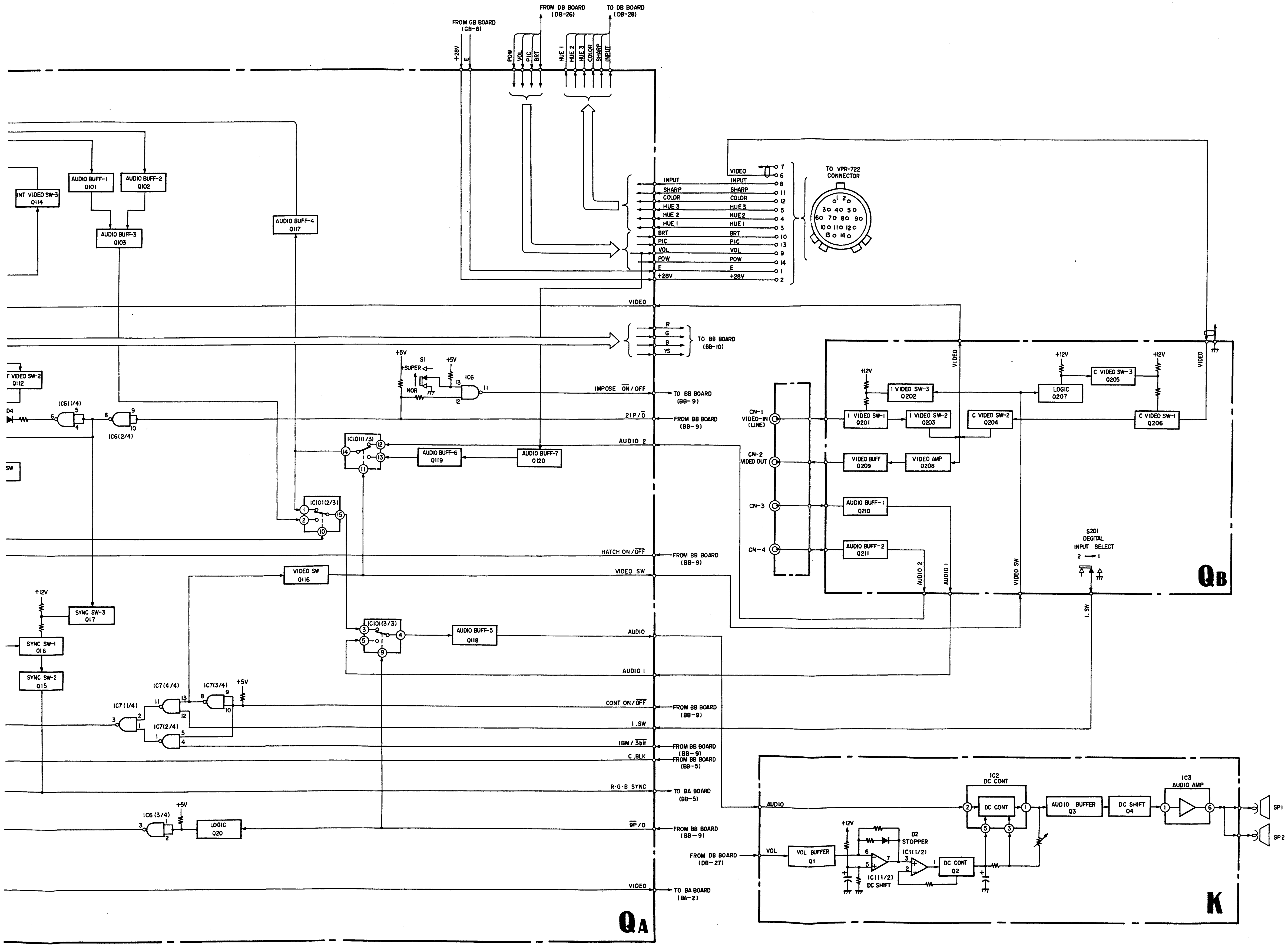
FA, FB, FC, GA, GB, GC BOARDS BLOCK DIAGRAM


FB
D2 PROTECT
RELAY DRIVE Q1, Q2
D1 STOPPER
RY1
S901 MASTER
AC IN
F1 5A/125V
T1 LFT
T2 LFT
T3
F2 0.25A/125V
RM +12V RECT D1
28V
RY1
RECT D2,3
T1 LFT
FC
RY-1
RY-2
D4 RY DAMP
FA
Vcc REG OUT Q601
T601 PRT-1
T602 PIT-1
Vcc RECT D605
D601 BASE CLAMP-1
KICK Q602
D602 BASE CLAMP-2
D611 PROTECT
IC604 PROTECTOR
IC602 PROTECTOR
IC601 POWER MODULATOR
D606 +12V PROTECT
D612 STOPPER
T604 PIT-2
REG OUT Q603
T603 PRT-2
D603 BASE CLAMP-3
KICK Q604
D604 BASE CLAMP-4
15V RECT D607
-15V RECT D608
200V RECT D609,610
T605 PRT-3
IC603 POWER MODULATOR
GA
Vcc
VC
OVP
RY
12V
15V
-15V
200V
100V
H
28V
D4 +3
ZEN
VC
Vcc
RY-1
D2 STOPPE
D1 STOPPE
RY-2
RELAY DRIVE Q1
OVP
RY
12V
F3 315mA
15V
15V
F2 3.15A
-15V
F1 3.15A
200V
100V
H
HEATER RECT D5,6,7,8

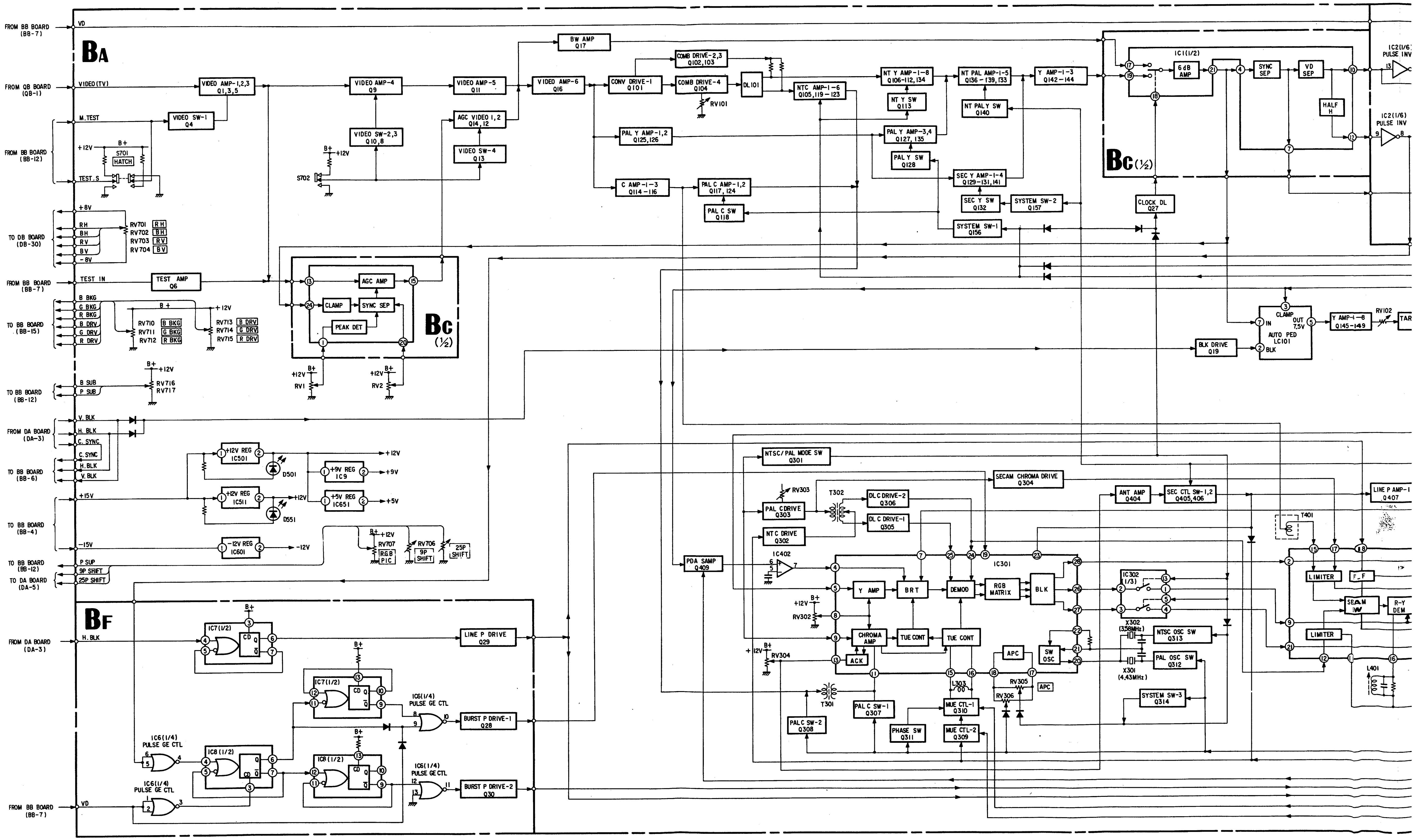

REG OUT
601
T601 PRT-1
D601
BASE
CLAMP-1
KICK
Q602
D602
BASE
CLAMP-2
T602
PIT-1
D611
PROTECT
Vcc RECT
D605
IC604
PROTECTOR
IC602
PROTECTOR
IC601
POWER
MODULATOR
D612
STOPPER
D606
+12V PROTECT
T604
PIT-2
15V RECT
D607
-15V RECT
D608
200V RECT
D609,610
T605
PRT-3
IC603
POWER
MODULATOR
OUT
603
T603 PRT-2
D603
BASE
CLAMP-3
KICK
Q604
D604
BASE
CLAMP-4
Vcc
VC
OVP
RY
12V
15V
-15V
200V
100V
H
28V
D4
+33V
ZENER
RY-1
D2 STOPPER
D1 STOPPER
RY-2
RELAY DRIVE
Q1
D3
STOPPER
D9
GATE
POWER
DELAY
F3
315mA
F2
3.15A
F1
3.15A
HEATER RECT
D5,6,7,8
+28V
FROM DA BOARD
(DA-1)
Vcc
15V
FROM DB BOARD
(DB-24)
TO EA BOARD
(EA-4)
FROM DA BOARD
(DA-1)
+12V
+15V
-15V
200V
100V
FROM DB BOARD
(DB-24)
TO CA BOARD
(CA-3)
GB
+28V
12V REG
IC2
+12V
+28V
11V REG
Q2
D3
12V ZENER
+28V +15V
PROTECT
CONTROL
IC1(1/2)
D2
5V ZENER
HV DELAY
Q3
+15V
D5
DISCHARGE
+12V
+28V
D1
INDICATOR
PROTECT
CONTROL
IC1(2/2)
PRT CONT
Q1
D4
SLICE
GC

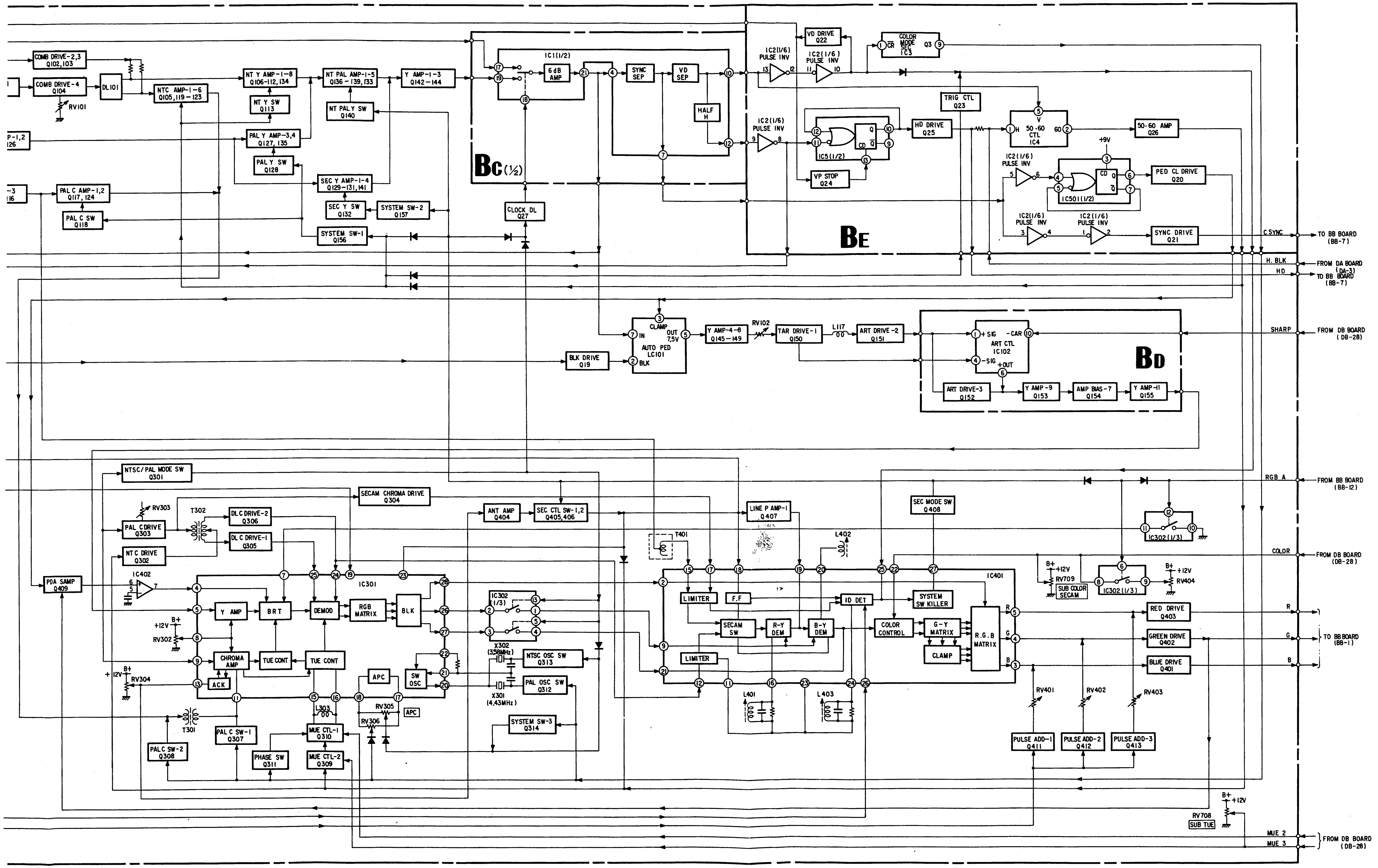
QA, QB, K BOARDS BLOCK DIAGRAM


CN-1
RGB 2 IN
AUDIO OUT
AUDIO IN
AUDIO OUT
AUDIO IN
B1
AV1
G1
R1
YS
VIDEO OUT
VIDEO IN
+12V
EXT VIDEO SW-1 Q108
EXT VIDEO SW-2 Q109
EXT VIDEO SW-3 Q110
D101
AV CONT Q107
AV SW Q106
R SW-1,2 Q2,3
G SW-1,2 Q4,5
B SW-1,2 Q6,7
D1~3
YS BUFF Q1
VIDEO BUFF Q104
VIDEO BUFF Q105
INT VIDEO SW-4 Q113
INT VIDEO SW-1 Q115
INT VIDEO SW-3 Q114
AUDIO BUFF-1 Q101
AUDIO BUFF-2 Q102
AUDIO BUFF-3 Q103
AUDIO BUFF-4 Q117
EXT VIDEO SW-4 Q111
INT VIDEO SW-2 Q112
D4
IC6(1/4)
IC6(2/4)
A R·G·B SW Q19
IC101(1/3)
IC101(2/3)
IC101(3/3)
AUDIO BUFF-5 Q118
AUDIO BUFF-6 Q119
AUDIO BUFF-7 Q120
VIDEO SW Q116
CN-2
RGB 1 IN
I
R2
HD
G2
VD
B2
+5V
IC1
R
G
B
I
I CONT Q11
BLK Q12
IC2
IC3(1/6)
IC3(2/6)
IC3(3/6)
IC3(4/6)
IC3(5/6)
IC3(6/6)
R·G·B BUFF Q8-10
D4~6
D R·G·B SW Q18
IC4(1/2)
IC4(2/2)
IC5
SYNC BUFF Q13
D SYNC SW Q14
SYNC SW-1 Q16
SYNC SW-2 Q15
SYNC SW-3 Q17
IC7(1/4)
IC7(2/4)
IC7(3/4)
IC7(4/4)
IC6(3/4)
LOGIC Q20
FROM GB BOARD (GB-6)
+15V
IC102
+12V REG
IC8
+5V REG
FROM GB BOARD (GB-6)
+28V
E
FROM DB BOARD (DB-26)
POW
VOL
PIC
BRT
TO DB BOARD (DB-28)
HUE 1
HUE 2
HUE 3
COLOR
SHARP
INPUT
VIDEO
TO VPR
CONNE
VIDEO
R
G
B
YS
TO BB BOARD (BB-10)
S1
SUPER
NOR
IC6
IMPOSE ON/OFF
TO BB BOARD (BB-9)
21P/O
FROM BB BOARD (BB-9)
AUDIO 2
CN-1 VIDEO-IN (LINE)
CN-2 VIDEO OUT
CN-3
CN-4
HATCH ON/OFF
FROM BB BOARD (BB-9)
VIDEO SW
AUDIO
AUDIO 1
CONT ON/OFF
FROM BB BOARD (BB-9)
I.SW
IBM/3bit
FROM BB BOARD (BB-9)
C.BLK
FROM BB BOARD (BB-5)
R·G·B SYNC
TO BA BOARD (BB-5)
9P/O
FROM BB BOARD (BB-9)
FROM DB BOARD (DB-27)
AUDIO
VOL
VOL BUFFER Q1
VIDEO
TO BA BOARD (BA-2)
QA

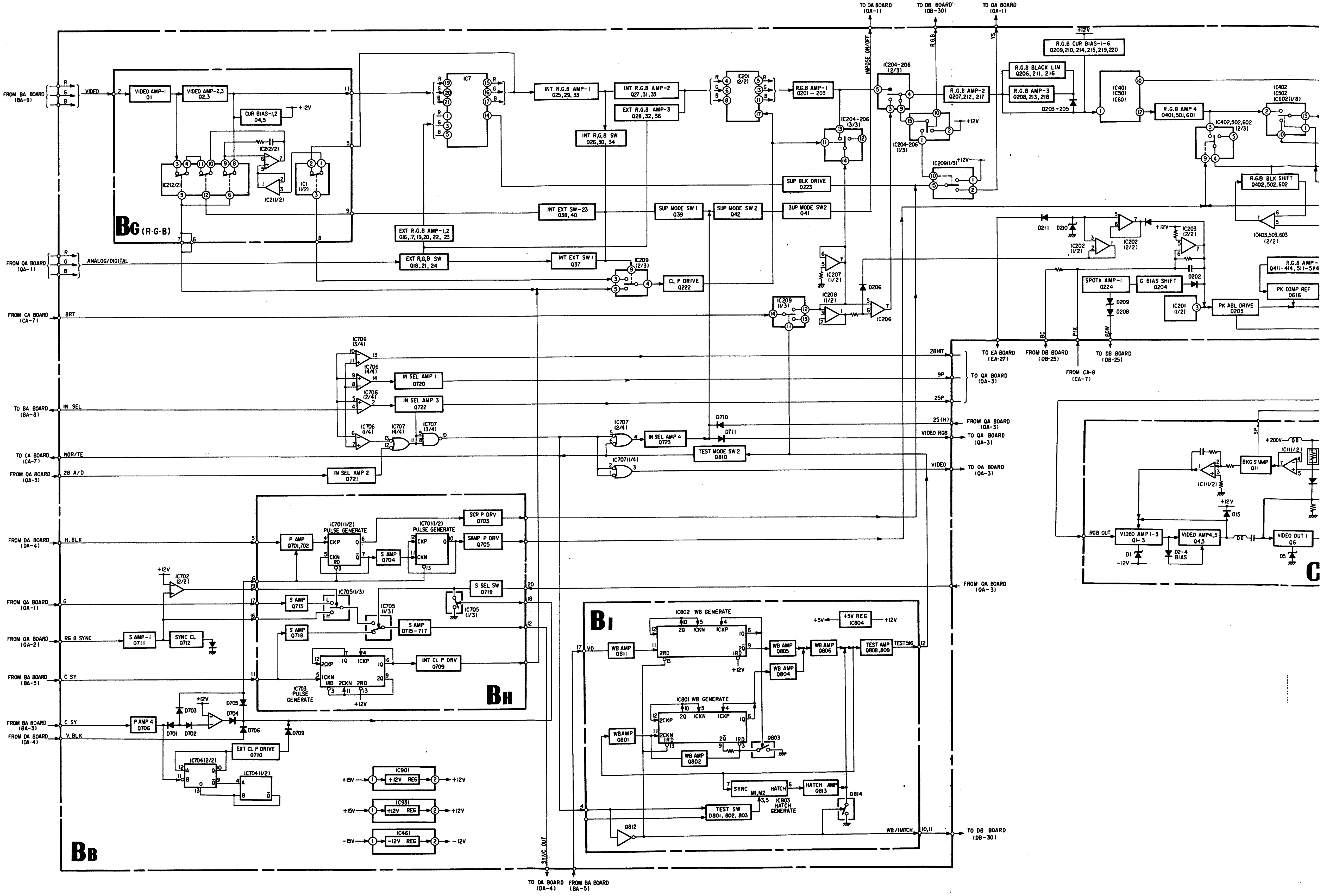

FROM GB BOARD (GB-6)
FROM DB BOARD (DB-26)
TO DB BOARD (DB-28)
+28V
E
POW
VOL
PIC
BRT
HUE 1
HUE 2
HUE 3
COLOR
SHARP
INPUT
INT VIDEO SW-3 Q114
AUDIO BUFF-1 Q101
AUDIO BUFF-2 Q102
AUDIO BUFF-3 Q103
AUDIO BUFF-4 Q117
VIDEO
INPUT
SHARP
COLOR
HUE 3
HUE 2
HUE 1
BRT
PIC
VOL
POW
E
+28V
TO VPR-722 CONNECTOR
R
G
B
YS
TO BB BOARD (BB-10)
+5V
S1
+SUPER
NOR
IC6
IMPOSE ON/OFF
TO BB BOARD (BB-9)
21P/0
FROM BB BOARD (BB-9)
AUDIO 2
T VIDEO SW-2 Q112
D4
IC6(1/4)
IC6(2/4)
SW
IC101(1/3)
AUDIO BUFF-6 Q119
AUDIO BUFF-7 Q120
IC101(2/3)
HATCH ON/OFF
FROM BB BOARD (BB-9)
VIDEO SW
VIDEO SW Q116
+12V
SYNC SW-3 Q17
SYNC SW-1 Q16
SYNC SW-2 Q15
IC101(3/3)
AUDIO BUFF-5 Q118
AUDIO
AUDIO 1
IC7(4/4)
IC7(3/4)
IC7(1/4)
IC7(2/4)
CONT ON/OFF
FROM BB BOARD (BB-9)
I.SW
IBM/3bit
FROM BB BOARD (BB-9)
C.BLK
FROM BB BOARD (BB-5)
R·G·B SYNC
TO BA BOARD (BB-5)
IC6(3/4)
LOGIC Q20
9P/0
FROM BB BOARD (BB-9)
VIDEO
TO BA BOARD (BA-2)
QA
CN-1 VIDEO-IN (LINE)
CN-2 VIDEO OUT
CN-3
CN-4
I VIDEO SW-1 Q201
I VIDEO SW-2 Q203
I VIDEO SW-3 Q202
C VIDEO SW-2 Q204
LOGIC Q207
C VIDEO SW-3 Q205
C VIDEO SW-1 Q206
VIDEO BUFF Q209
VIDEO AMP Q208
AUDIO BUFF-1 Q210
AUDIO BUFF-2 Q211
AUDIO 2
AUDIO 1
VIDEO SW
S201 DEGITAL INPUT SELECT
2 → 1
I.SW
QB
AUDIO
IC2 DC CONT
DC CONT
IC3 AUDIO AMP
AUDIO BUFFER Q3
DC SHIFT Q4
SP1
SP2
FROM DB BOARD (DB-27)
VOL
VOL BUFFER Q1
D2 STOPPER
IC1(1/2)
IC1(1/2) DC SHIFT
DC CONT Q2
K

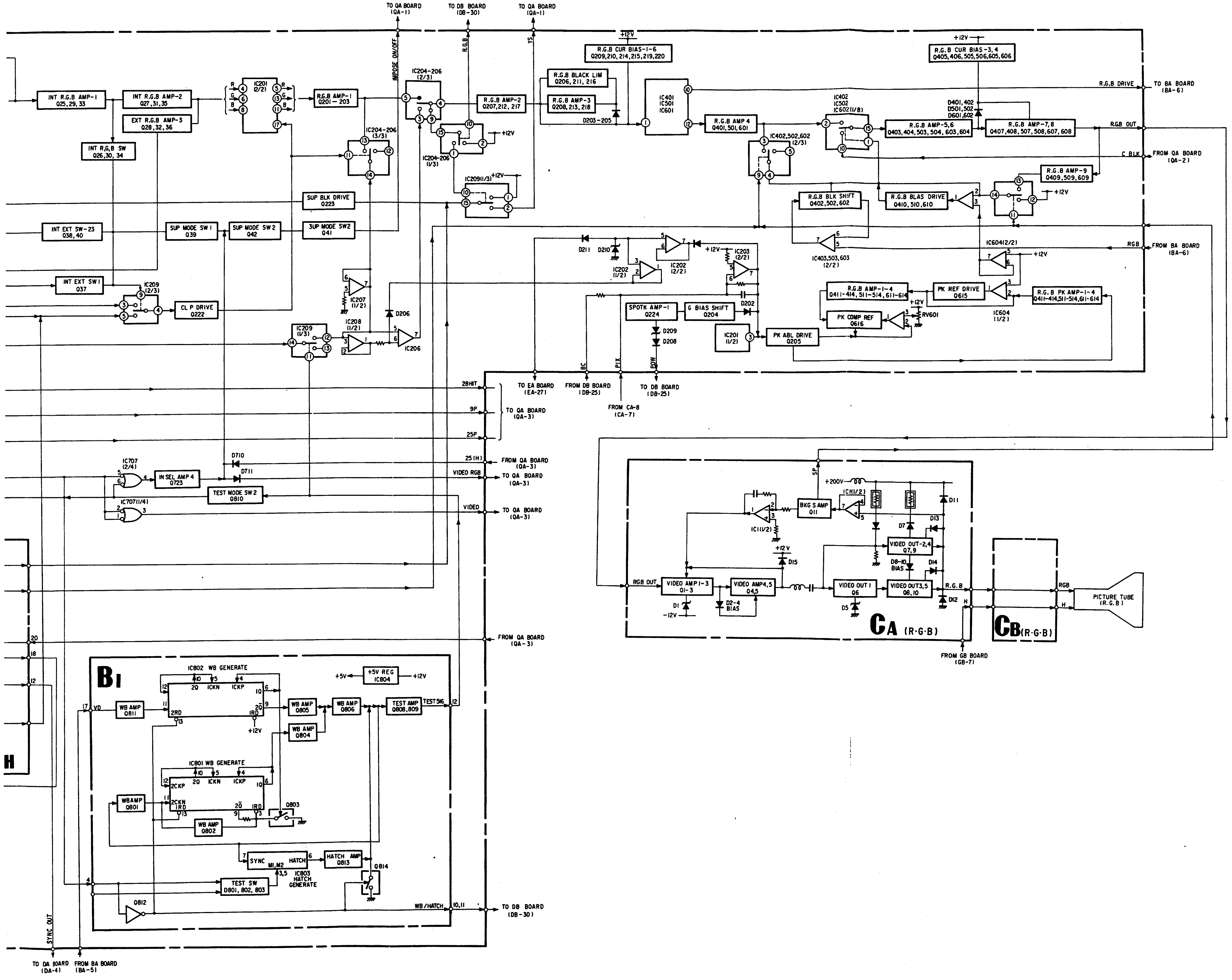
BA, BC, BD, BE, BF BOARDS BLOCK DIAGRAM


BA
BC (½)
BF
FROM BB BOARD (BB-7)
VD
FROM QB BOARD (QB-1)
VIDEO (TV)
FROM BB BOARD (BB-12)
M. TEST
+12V
TEST. S
S701 HATCH
B+
TO DB BOARD (DB-30)
+8V
RH
BH
RV
BV
-8V
RV701 RH
RV702 BH
RV703 RV
RV704 BV
FROM BB BOARD (BB-7)
TEST IN
TEST AMP Q6
TO BB BOARD (BB-15)
B BKG
G BKG
R BKG
B DRV
G DRV
R DRV
RV710 B BKG
RV711 G BKG
RV712 R BKG
RV713 B DRV
RV714 G DRV
RV715 R DRV
TO BB BOARD (BB-12)
B SUB
P SUB
RV716
RV717
FROM DA BOARD (DA-3)
V. BLK
H. BLK
C. SYNC
TO BB BOARD (BB-6)
TO BB BOARD (BB-4)
+15V
-15V
TO BB BOARD (BB-12)
TO DA BOARD (DA-5)
P SUP
9P SHIFT
25P SHIFT
VIDEO AMP-1,2,3 Q1,3,5
VIDEO SW-1 Q4
VIDEO AMP-4 Q9
VIDEO SW-2,3 Q10,8
S702
VIDEO AMP-5 Q11
AGC VIDEO 1,2 Q14,12
VIDEO SW-4 Q13
BW AMP Q17
VIDEO AMP-6 Q16
CONV DRIVE-1 Q101
COMB DRIVE-2,3 Q102,103
COMB DRIVE-4 Q104
RV101
DL101
NTC AMP-1-6 Q105,119-123
PAL Y AMP-1,2 Q125,126
C AMP-1-3 Q114-116
PAL C AMP-1,2 Q117,124
PAL C SW Q118
NT Y AMP-1-8 Q106-112,134
NT Y SW Q113
PAL Y AMP-3,4 Q127,135
PAL Y SW Q128
NT PAL AMP-1-5 Q136-139,133
NT PAL Y SW Q140
SEC Y AMP-1-4 Q129-131,141
SEC Y SW Q132
SYSTEM SW-2 Q157
SYSTEM SW-1 Q156
Y AMP-1-3 Q142-144
IC1(1/2)
6dB AMP
SYNC SEP
VD SEP
HALF H
IC2(1/6) PULSE INV
CLOCK DL Q27
AGC AMP
CLAMP
SYNC SEP
PEAK DET
RV1
RV2
CLAMP IN OUT 7.5V AUTO PED LC101 BLK
Y AMP-1-6 Q145-149
RV102
TAR
BLK DRIVE Q19
+12V REG IC501
D501
+9V REG IC9
+12V REG IC511
D551
+5V REG IC651
-12V REG IC601
RV707 RGB PIC
RV706 9P SHIFT
25P SHIFT
H. BLK
IC7(1/2)
LINE P DRIVE Q29
IC6(1/4) PULSE GE CTL
BURST P DRIVE-1 Q28
IC8(1/2)
BURST P DRIVE-2 Q30
FROM DA BOARD (DA-3)
FROM BB BOARD (BB-7)
NTSC/PAL MODE SW Q301
SECAM CHROMA DRIVE Q304
RV303
T302
PAL C DRIVE Q303
DL C DRIVE-2 Q306
DL C DRIVE-1 Q305
NTC DRIVE Q302
IC402
PDA SAMP Q409
IC301
Y AMP
BRT
DEMOD
RGB MATRIX
BLK
RV302
CHROMA AMP
TUE CONT
TUE CONT
ACK
RV304
APC
SW OSC
L303
RV305
RV306
T301
PAL C SW-2 Q308
PAL C SW-1 Q307
PHASE SW Q311
MUE CTL-1 Q310
MUE CTL-2 Q309
ANT AMP Q404
SEC CTL SW-1,2 Q405,406
IC302 (1/3)
X302 (3.58MHz)
X301 (4.43MHz)
NTSC OSC SW Q313
PAL OSC SW Q312
SYSTEM SW-3 Q314
T401
LIMITER
F-F
SEAM W
R-Y DEM
LIMITER
L401
LINE P AMP-1 Q407

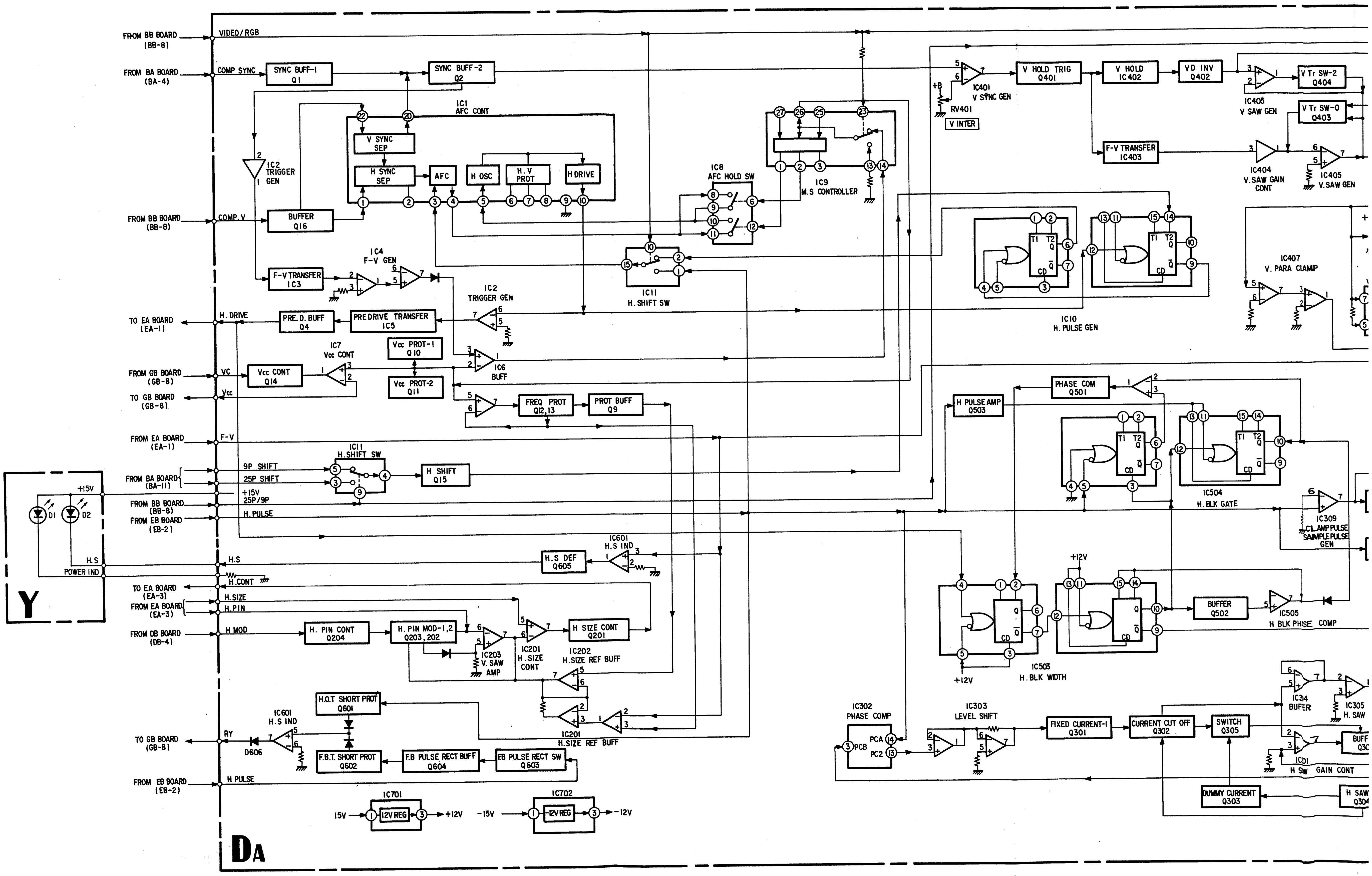

COMB DRIVE-2,3
Q102,103
COMB DRIVE-4
Q104
RV101
DL101
NTC AMP-1-6
Q105,119-123
NT Y AMP-1-8
Q106-112,134
NT Y SW
Q113
NT PAL AMP-1-5
Q136-139,133
NT PAL Y SW
Q140
Y AMP-1-3
Q142-144
PAL Y AMP-3,4
Q127,135
PAL Y SW
Q128
SEC Y AMP-1-4
Q129-131,141
SEC Y SW
Q132
SYSTEM SW-2
Q157
SYSTEM SW-1
Q156
PAL C AMP-1,2
Q117,124
PAL C SW
Q118
IC1(1/2)
6dB
AMP
SYNC
SEP
VD
SEP
HALF
H
Bc(½)
CLOCK DL
Q27
VD DRIVE
Q22
IC2(1/6)
PULSE INV
COLOR
MODE
SEL
IC3
Q3
TRIG CTL
Q23
HD DRIVE
Q25
IC5(1/2)
CD
Q
VP STOP
Q24
H
V
50·60
CTL
IC4
60
50·60 AMP
Q26
+9V
PED CL DRIVE
Q20
IC501(1/2)
SYNC DRIVE
Q21
BE
C SYNC
TO BB BOARD
(BB-7)
H. BLK
FROM DA BOARD
(DA-3)
HD
TO BB BOARD
(BB-7)
CLAMP
IN
OUT
7.5V
AUTO PED
LC101
BLK
BLK DRIVE
Q19
Y AMP-4-8
Q145-149
RV102
TAR DRIVE-1
Q150
L117
ART DRIVE-2
Q151
+SIG
-CAR
ART CTL
IC102
-SIG
+OUT
BD
ART DRIVE-3
Q152
Y AMP-9
Q153
AMP BIAS-7
Q154
Y AMP-11
Q155
SHARP
FROM DB BOARD
(DB-28)
NTSC/PAL MODE SW
Q301
SECAM CHROMA DRIVE
Q304
RV303
T302
DL C DRIVE-2
Q306
PAL C DRIVE
Q303
DL C DRIVE-1
Q305
NTC DRIVE
Q302
IC402
PDA SAMP
Q409
IC301
Y AMP
BRT
DEMOD
RGB
MATRIX
BLK
+12V
B+
RV302
CHROMA
AMP
TUE CONT
TUE CONT
ACK
RV304
APC
SW
OSC
L303
RV305
RV306
APC
T301
PAL C SW-1
Q307
PAL C SW-2
Q308
MUE CTL-1
Q310
PHASE SW
Q311
MUE CTL-2
Q309
IC302
(1/3)
X302
(3.58MHz)
X301
(4.43MHz)
NTSC OSC SW
Q313
PAL OSC SW
Q312
SYSTEM SW-3
Q314
ANT AMP
Q404
SEC CTL SW-1,2
Q405,406
LINE P AMP-1
Q407
T401
L402
SEC MODE SW
Q408
IC401
LIMITER
F.F
ID DET
SYSTEM
SW KILLER
SECAM
SW
R-Y
DEM
B-Y
DEM
COLOR
CONTROL
G-Y
MATRIX
CLAMP
R.G.B
MATRIX
LIMITER
L401
L403
RGB A
FROM BB BOARD
(BB-12)
IC302(1/3)
COLOR
FROM DB BOARD
(DB-28)
B+
+12V
RV709
SUB COLOR
SECAM
IC302(1/3)
RV404
RED DRIVE
Q403
GREEN DRIVE
Q402
BLUE DRIVE
Q401
R
G
B
TO BB BOARD
(BB-1)
RV401
RV402
RV403
PULSE ADD-1
Q411
PULSE ADD-2
Q412
PULSE ADD-3
Q413
RV708
SUB TUE
MUE 2
MUE 3
FROM DB BOARD
(DB-28)

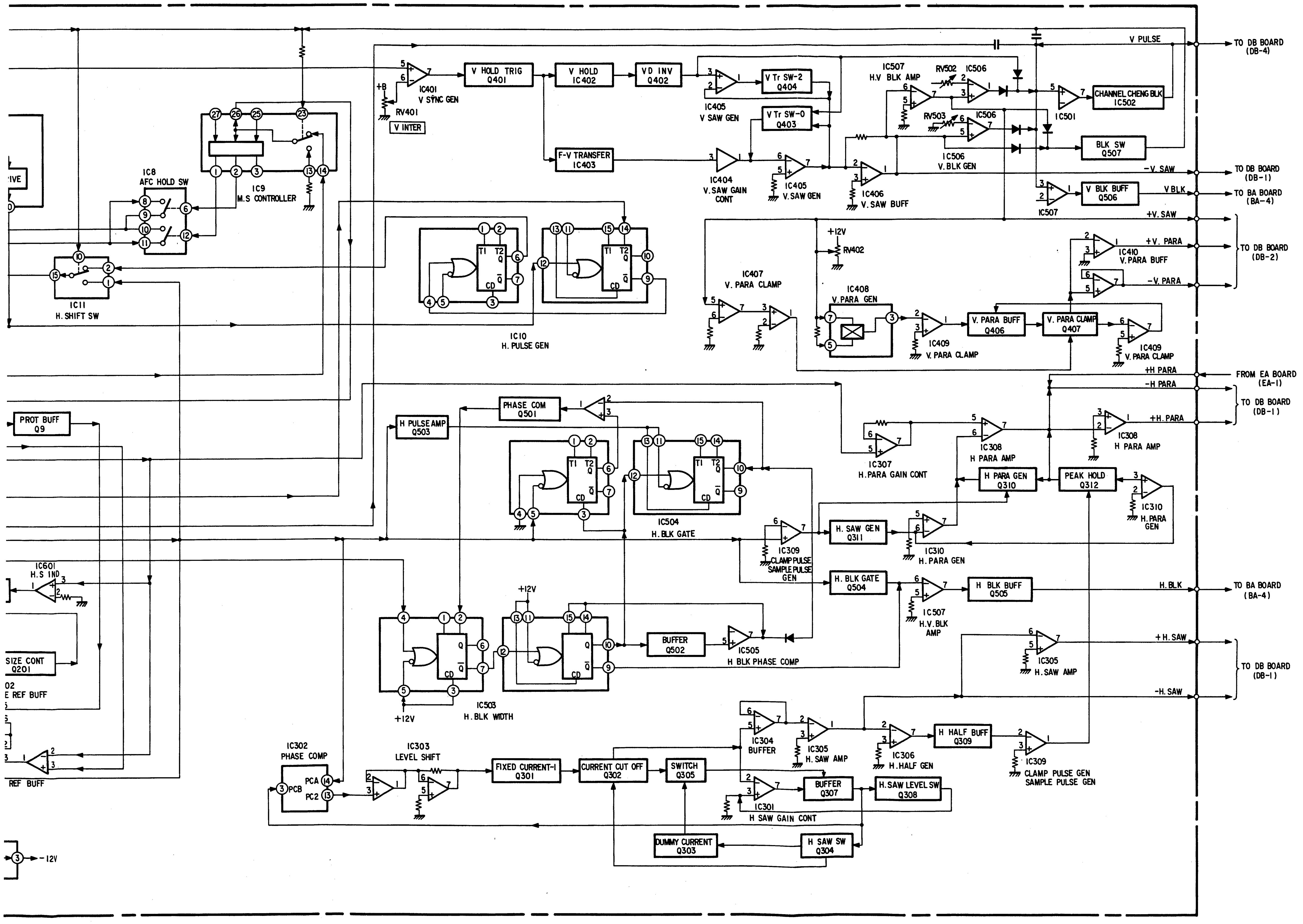
BB, BG, BH, BI, CA, CB BOARDS BLOCK DIAGRAM


FROM BA BOARD (BA-9)
VIDEO
VIDEO AMP-1 Q1
VIDEO AMP-2,3 Q2,3
CUR BIAS-1,2 Q4,5
+12V
IC2(2/2)
IC2(1/2)
IC1 (1/2)
Bg (R·G·B)
IC7
INT R.G.B AMP-1 Q25,29,33
INT R.G.B AMP-2 Q27,31,35
EXT R.G.B AMP-3 Q28,32,36
INT R,G,B SW Q26,30,34
IC201 (2/2)
R.G.B AMP-1 Q201-203
IMPOSE ON/OFF
IC204-206 (2/3)
IC204-206 (3/3)
IC204-206 (1/3)
R.G.B AMP-2 Q207,212,217
IC209(1/3)
R.G.B CUR BIAS-1-6 Q209,210,214,215,219,220
R.G.B BLACK LIM Q206,211,216
R.G.B AMP-3 Q208,213,218
D203-205
IC401 IC501 IC601
R.G.B AMP 4 Q401,501,601
IC402 IC502 IC602(1/8)
IC402,502,602 (2/3)
R.G.B BLK SHIFT Q402,502,602
IC403,503,603 (2/2)
TO QA BOARD (QA-1)
TO DB BOARD (DB-30)
R.G.B
YS
SUP BLK DRIVE Q223
INT EXT SW-23 Q38,40
SUP MODE SW 1 Q39
SUP MODE SW 2 Q42
SUP MODE SW2 Q41
EXT R.G.B AMP-1,2 Q16,17,19,20,22,23
FROM QA BOARD (QA-1)
ANALOG/DIGITAL
EXT R,G,B SW Q18,21,24
INT EXT SW 1 Q37
IC209 (2/3)
CL P DRIVE Q222
IC207 (1/2)
IC208 (1/2)
IC209 (1/3)
D206
IC206
D211
D210
IC202 (1/2)
IC202 (2/2)
IC203 (2/2)
SPOTK AMP-1 Q224
G BIAS SHIFT Q204
D202
D209
D208
IC201 (1/2)
PK ABL DRIVE Q205
R.G.B AMP- Q411-414,511-514
PK COMP REF Q616
FROM CA BOARD (CA-7)
BRT
BC
PIX
PW
TO EA BOARD (EA-27)
FROM DB BOARD (DB-25)
TO DB BOARD (DB-25)
FROM CA-8 (CA-7)
IC706 (3/4)
IC706 (4/4)
IC706 (2/4)
IN SEL AMP 1 Q720
IN SEL AMP 3 Q722
28HIT
9P
25P
TO QA BOARD (QA-3)
TO BA BOARD (BA-8)
IN SEL
IC706 (1/4)
IC707 (4/4)
IC707 (3/4)
IC707 (2/4)
IN SEL AMP 4 Q723
D710
D711
TEST MODE SW 2 Q810
IC707(1/4)
25(H)
VIDEO RGB
VIDEO
FROM QA BOARD (QA-3)
TO QA BOARD (QA-3)
TO CA BOARD (CA-7)
NOR/TE
FROM QA BOARD (QA-3)
28 A/D
IN SEL AMP 2 Q721
FROM DA BOARD (DA-4)
H.BLK
P AMP Q701,702
IC701(1/2) PULSE GENERATE
S AMP Q704
IC701(1/2) PULSE GENERATE
SCR P DRV Q703
SAMP P DRV Q705
S SEL SW Q719
+12V
IC702 (2/2)
FROM QA BOARD (QA-1)
G
S AMP Q713
IC705(1/3)
IC705 (1/3)
S AMP Q715-717
S AMP Q718
IC705 (1/3)
FROM QA BOARD (QA-2)
RG B SYNC
S AMP-1 Q711
SYNC CL Q712
INT CL P DRV Q709
FROM BA BOARD (BA-5)
C SY
IC703 PULSE GENERATE
Bh
FROM BA BOARD (BA-3)
FROM DA BOARD (DA-4)
V.BLK
P AMP 4 Q706
D701
D702
D703
D704
D705
D706
D709
EXT CL P DRIVE Q710
IC704(2/2)
IC704(1/2)
IC901
+15V
+12V REG
+12V
IC931
IC461
-15V
-12V REG
-12V
Bb
SYNC OUT
TO DA BOARD (DA-4)
FROM BA BOARD (BA-5)
Bi
IC802 WB GENERATE
VD
WB AMP Q811
+5V
+5V REG IC804
WB AMP Q805
WB AMP Q806
WB AMP Q804
TEST AMP Q808,809
TEST516
IC801 WB GENERATE
WBAMP Q801
WB AMP Q802
Q803
SYNC M1,M2
HATCH
IC803 HATCH GENERATE
HATCH AMP Q813
Q814
TEST SW D801,802,803
Q812
WB/HATCH
TO DB BOARD (DB-30)
FROM QA BOARD (QA-3)
SP
+200V
IC11(2/2)
IC11(1/2)
BKG SAMP Q11
+12V
D15
RGB OUT
VIDEO AMP1-3 Q1-3
VIDEO AMP4,5 Q4,5
VIDEO OUT 1 Q6
D1
-12V
D2-4 BIAS
D5
C

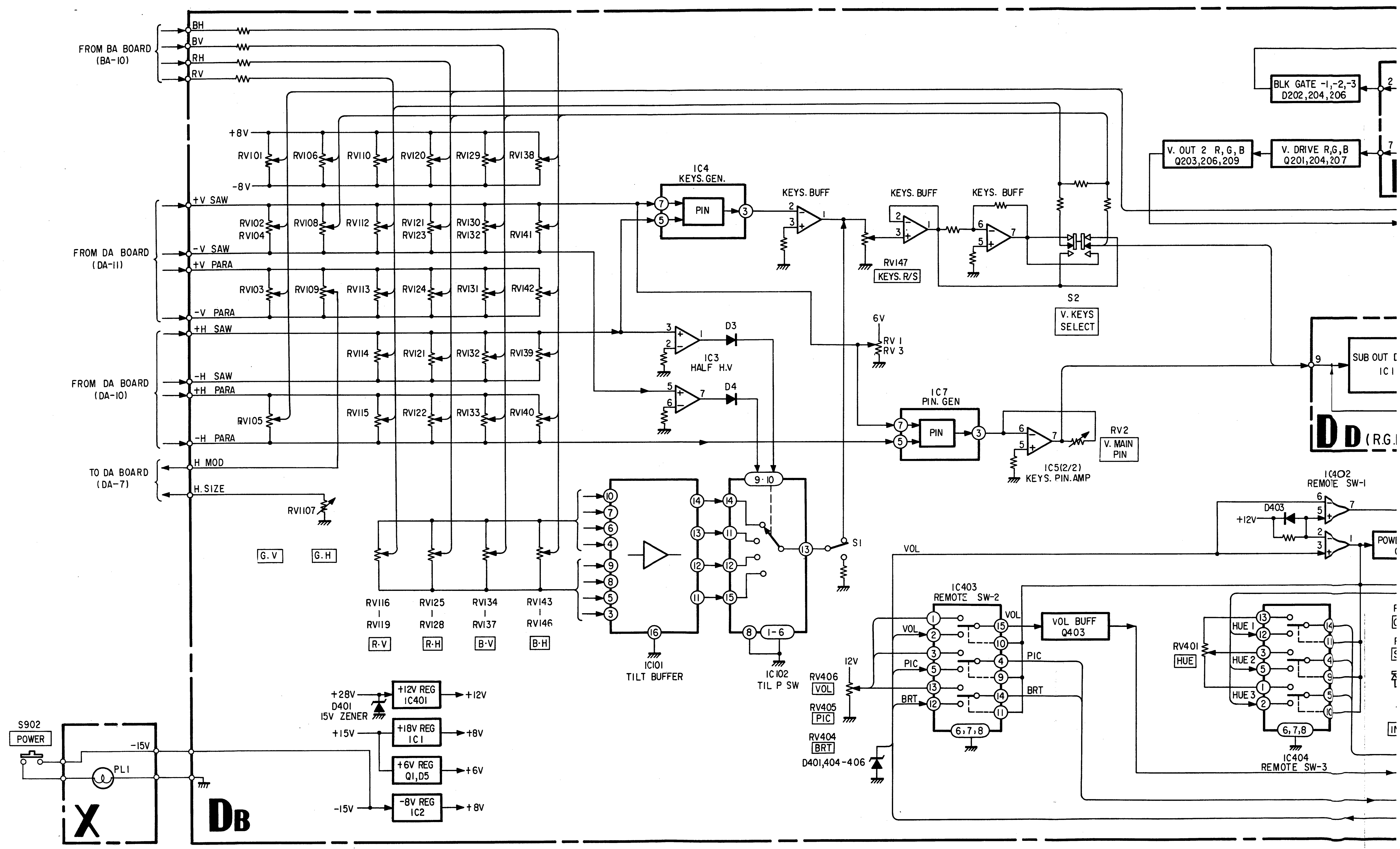

TO QA BOARD (QA-1)
TO DB BOARD (DB-30)
TO QA BOARD (QA-1)
IMPOSE ON/OFF
R.G.B
YS
+12V
R.G.B CUR BIAS-1-6 Q209,210,214,215,219,220
R.G.B CUR BIAS-3,4 Q405,406,505,506,605,606
R.G.B BLACK LIM Q206,211,216
R.G.B AMP-3 Q208,213,218
D203-205
INT R.G.B AMP-1 Q25,29,33
INT R.G.B AMP-2 Q27,31,35
EXT R.G.B AMP-3 Q28,32,36
INT R.G.B SW Q26,30,34
IC201 (2/2)
R.G.B AMP-1 Q201-203
IC204-206 (2/3)
R.G.B AMP-2 Q207,212,217
IC204-206 (3/3)
IC204-206 (1/3)
IC209(1/3)
IC401 IC501 IC601
R.G.B AMP 4 Q401,501,601
IC402 IC502 IC602(1/8)
IC402,502,602 (2/3)
D401,402 D501,502 D601,602
R.G.B AMP-5,6 Q403,404,503,504,603,604
R.G.B AMP-7,8 Q407,408,507,508,607,608
R.G.B DRIVE
TO BA BOARD (BA-6)
RGB OUT
C BLK
FROM QA BOARD (QA-2)
R.G.B AMP-9 Q409,509,609
R.G.B BLK SHIFT Q402,502,602
R.G.B BIAS DRIVE Q410,510,610
SUP BLK DRIVE Q223
SUP MODE SW 1 Q39
SUP MODE SW 2 Q42
SUP MODE SW2 Q41
INT EXT SW-23 Q38,40
INT EXT SW1 Q37
IC209 (2/3)
CL P DRIVE Q222
IC207 (1/2)
IC208 (1/2)
D206
IC206
IC209 (1/3)
D211 D210
IC202 (1/2)
IC202 (2/2)
IC203 (2/2)
IC403,503,603 (2/2)
IC604(2/2)
RGB
FROM BA BOARD (BA-6)
R.G.B AMP-1-4 Q411-414,511-514,611-614
PK REF DRIVE Q615
R.G.B PK AMP-1-4 Q411-414,511-514,611-614
PK COMP REF Q616
RV601
IC604 (1/2)
SPOTK AMP-1 Q224
G BIAS SHIFT Q204
D202
D209 D208
IC201 (1/2)
PK ABL DRIVE Q205
28HIT
9P
25P
TO EA BOARD (EA-27)
FROM DB BOARD (DB-25)
TO DB BOARD (DB-25)
FROM CA-8 (CA-7)
BC
PIX
POW
TO QA BOARD (QA-3)
25(H)
FROM QA BOARD (QA-3)
VIDEO RGB
TO QA BOARD (QA-3)
VIDEO
TO QA BOARD (QA-3)
IC707 (2/4)
IN SEL AMP 4 Q723
D710
D711
TEST MODE SW 2 Q810
IC707(1/4)
FROM QA BOARD (QA-3)
20
18
12
H
B1
IC802 WB GENERATE
ICKN ICKP
2RD IRD
+5V REG IC804
+5V +12V
WB AMP Q811
VD
WB AMP Q805
WB AMP Q806
WB AMP Q804
TEST AMP Q808,809
TEST 5/6
IC801 WB GENERATE
2CKP 2CKN
WB AMP Q801
WB AMP Q802
Q803
SYNC
HATCH
M1,M2
HATCH AMP Q813
Q814
IC803 HATCH GENERATE
TEST SW D801, 802, 803
Q812
WB/HATCH
10,11
TO DB BOARD (DB-30)
SYNC OUT
TO DA BOARD (DA-4)
FROM BA BOARD (BA-5)
SP
+200V
IC11(1/2)
BKG S AMP Q11
IC11(1/2)
D11
D13
D7
VIDEO OUT-2,4 Q7,9
D8-10 BIAS
D14
D15
RGB OUT
VIDEO AMP1-3 Q1-3
VIDEO AMP4,5 Q4,5
VIDEO OUT 1 Q6
VIDEO OUT3,5 Q8,10
R.G.B
D12
D1
-12V
D2-4 BIAS
D5
CA (R·G·B)
CB (R·G·B)
RGB
H
PICTURE TUBE (R.G.B)
FROM GB BOARD (GB-7)

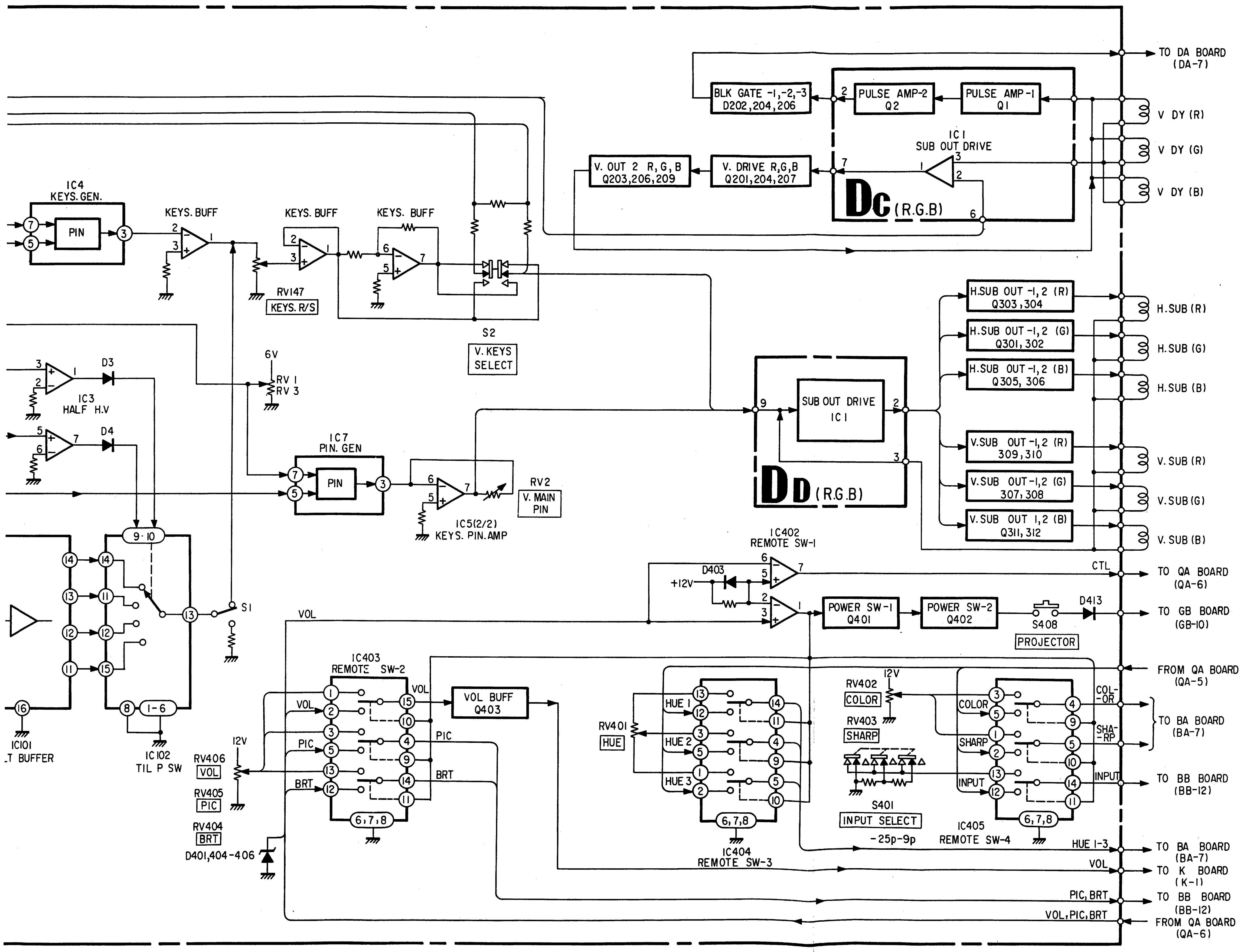
DA, Y BOARDS BLOCK DIAGRAM


FROM BB BOARD (BB-8)
VIDEO/RGB
FROM BA BOARD (BA-4)
COMP SYNC
SYNC BUFF-1 Q1
SYNC BUFF-2 Q2
IC1 AFC CONT
V SYNC SEP
H SYNC SEP
AFC
H OSC
H.V PROT
H DRIVE
IC2 TRIGGER GEN
FROM BB BOARD (BB-8)
COMP.V
BUFFER Q16
IC8 AFC HOLD SW
IC9 M.S CONTROLLER
IC4 F-V GEN
F-V TRANSFER IC3
IC11 H. SHIFT SW
IC2 TRIGGER GEN
TO EA BOARD (EA-1)
H. DRIVE
PRE. D. BUFF Q4
PREDRIVE TRANSFER IC5
IC7 Vcc CONT
Vcc PROT-1 Q10
Vcc PROT-2 Q11
IC6 BUFF
FROM GB BOARD (GB-8)
VC
Vcc CONT Q14
TO GB BOARD (GB-8)
Vcc
FREQ PROT Q12, 13
PROT BUFF Q9
FROM EA BOARD (EA-1)
F-V
FROM BA BOARD (BA-11)
9P SHIFT
25P SHIFT
IC11 H.SHIFT SW
H SHIFT Q15
+15V
25P/9P
FROM BB BOARD (BB-8)
FROM EB BOARD (EB-2)
H. PULSE
+15V
D1
D2
H.S
POWER IND
Y
H.S
IC601 H.S IND
H.S DEF Q605
H.CONT
TO EA BOARD (EA-3)
FROM EA BOARD (EA-3)
H. SIZE
H. PIN
FROM DB BOARD (DB-4)
H MOD
H. PIN CONT Q204
H. PIN MOD-1, 2 Q203, 202
IC203 V. SAW AMP
IC201 H. SIZE CONT
H SIZE CONT Q201
IC202 H.SIZE REF BUFF
IC201 H.SIZE REF BUFF
H.O.T SHORT PROT Q601
IC601 H.S IND
TO GB BOARD (GB-8)
RY
D606
F.B.T. SHORT PROT Q602
F.B PULSE RECT BUFF Q604
FB PULSE RECT SW Q603
FROM EB BOARD (EB-2)
H PULSE
IC701
15V
12V REG
+12V
IC702
-15V
-12V REG
-12V
DA
IC401 V SYNC GEN
+B
RV401
V INTER
V HOLD TRIG Q401
V HOLD IC402
VD INV Q402
IC405 V SAW GEN
V Tr SW-2 Q404
V Tr SW-0 Q403
F-V TRANSFER IC403
IC404 V.SAW GAIN CONT
IC405 V.SAW GEN
IC10 H. PULSE GEN
IC407 V. PARA CLAMP
PHASE COM Q501
H PULSE AMP Q503
IC504 H. BLK GATE
IC309 CLAMP PULSE SAMPLE PULSE GEN
+12V
BUFFER Q502
IC505 H BLK PHASE COMP
+12V
IC503 H. BLK WIDTH
IC302 PHASE COMP
PCA
PCB
PC2
IC303 LEVEL SHIFT
FIXED CURRENT-1 Q301
CURRENT CUT OFF Q302
SWITCH Q305
IC304 BUFFER
IC305 H. SAW
IC301 H SW GAIN CONT
DUMMY CURRENT Q303
H SAW Q304
BUFF Q30
T1 T2 Q CD

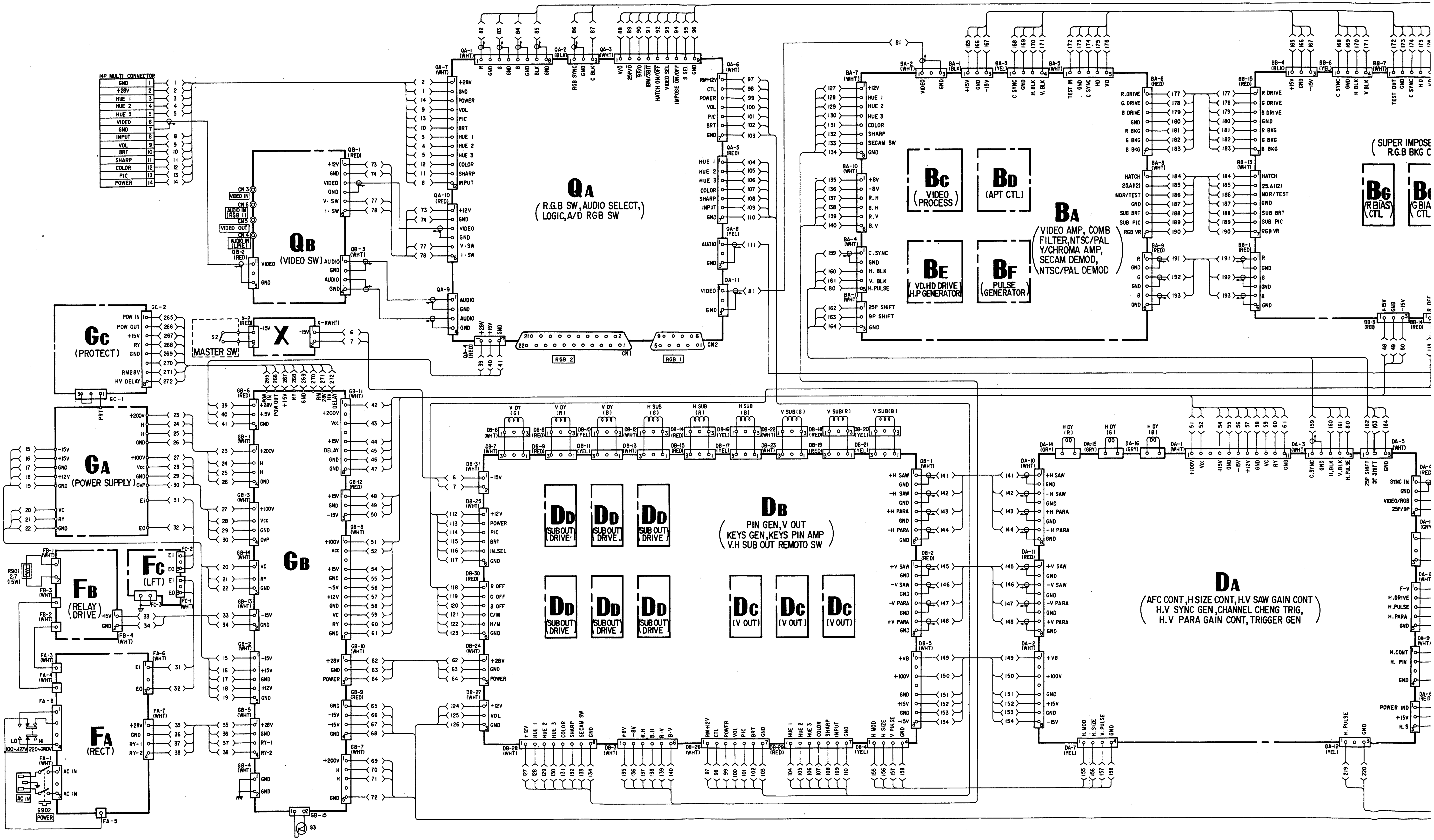

V PULSE
TO DB BOARD (DB-4)
V HOLD TRIG Q401
V HOLD IC402
VD INV Q402
V Tr SW-2 Q404
V Tr SW-0 Q403
IC401 V SYNC GEN
RV401
V INTER
IC405 V SAW GEN
F-V TRANSFER IC403
IC404 V.SAW GAIN CONT
IC405 V.SAW GEN
IC406 V.SAW BUFF
IC507 H.V BLK AMP
RV502 IC506
RV503 IC506
IC506 V.BLK GEN
CHANNEL CHENG BLK IC502
IC501
BLK SW Q507
-V. SAW
TO DB BOARD (DB-1)
V BLK BUFF Q506
IC507
V BLK
TO BA BOARD (BA-4)
+V. SAW
+12V
RV402
+V. PARA
IC410 V.PARA BUFF
-V. PARA
TO DB BOARD (DB-2)
IC407 V. PARA CLAMP
IC408 V.PARA GEN
V. PARA BUFF Q406
V. PARA CLAMP Q407
IC409 V. PARA CLAMP
IC409 V. PARA CLAMP
+H PARA
FROM EA BOARD (EA-1)
-H PARA
TO DB BOARD (DB-1)
IC8 AFC HOLD SW
IC9 M.S CONTROLLER
IC11 H. SHIFT SW
IC10 H. PULSE GEN
PROT BUFF Q9
PHASE COM Q501
H PULSE AMP Q503
IC504 H. BLK GATE
IC307 H. PARA GAIN CONT
IC308 H PARA AMP
+H. PARA
IC308 H PARA AMP
H PARA GEN Q310
PEAK HOLD Q312
IC310 H. PARA GEN
H. SAW GEN Q311
IC310 H. PARA GEN
IC309 CLAMP PULSE SAMPLE PULSE GEN
H. BLK GATE Q504
IC507 H.V. BLK AMP
H BLK BUFF Q505
H. BLK
TO BA BOARD (BA-4)
IC601 H.S IND
SIZE CONT Q201
Q202 E REF BUFF
REF BUFF
+12V
BUFFER Q502
IC505 H BLK PHASE COMP
IC503 H. BLK WIDTH
+12V
+H. SAW
IC305 H. SAW AMP
TO DB BOARD (DB-1)
-H. SAW
IC302 PHASE COMP
PCA
PCB
PC2
IC303 LEVEL SHIFT
FIXED CURRENT-I Q301
CURRENT CUT OFF Q302
SWITCH Q305
IC304 BUFFER
IC305 H. SAW AMP
IC306 H. HALF GEN
H HALF BUFF Q309
IC309 CLAMP PULSE GEN SAMPLE PULSE GEN
BUFFER Q307
H. SAW LEVEL SW Q308
IC301 H SAW GAIN CONT
DUMMY CURRENT Q303
H SAW SW Q304
-12V

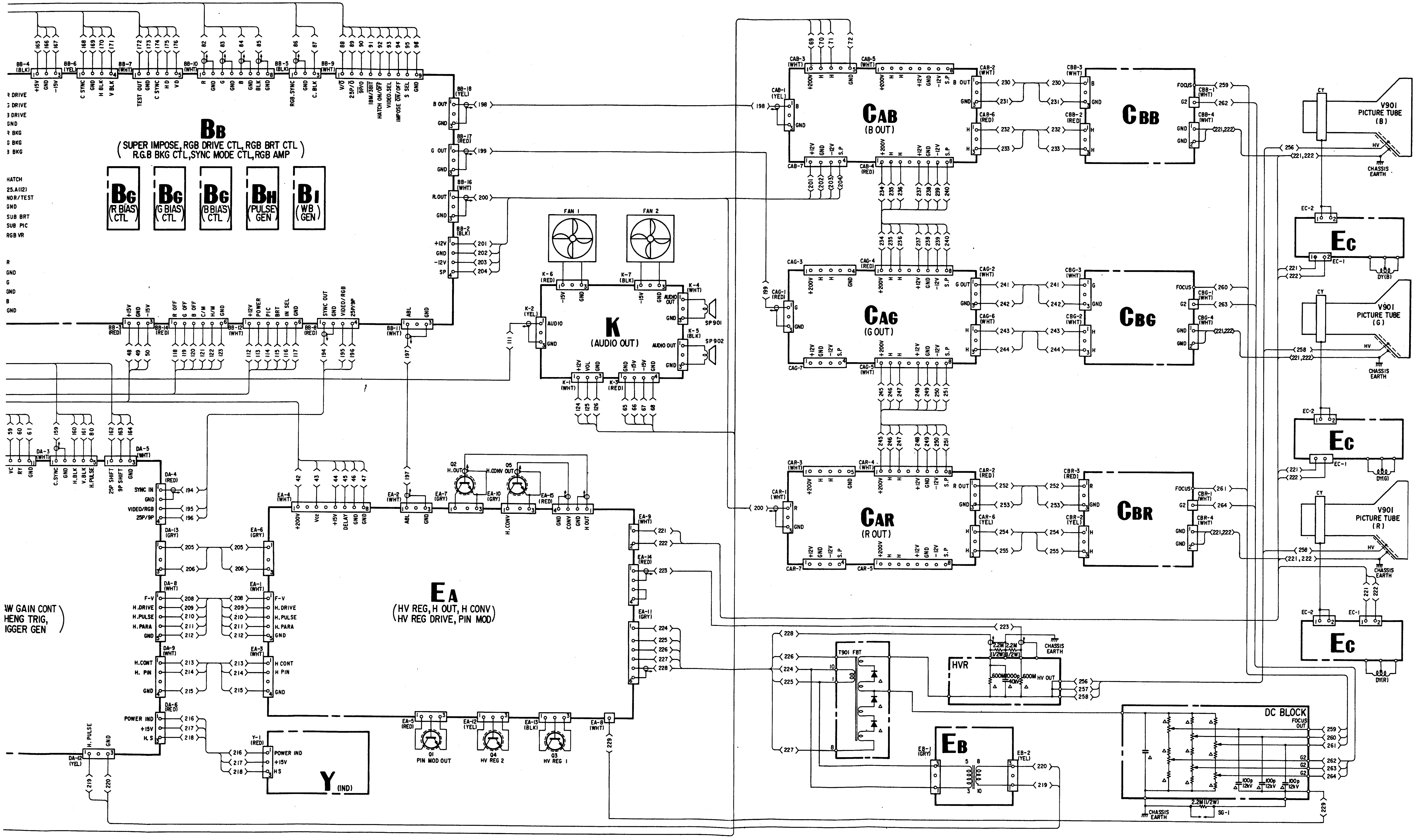
DB, DC, DD, X BOARDS BLOCK DIAGRAM


FROM BA BOARD (BA-10)
BH
BV
RH
RV
BLK GATE -1,-2,-3 D202,204,206
V. OUT 2 R,G,B Q203,206,209
V. DRIVE R,G,B Q201,204,207
+8V
-8V
RV101
RV106
RV110
RV120
RV129
RV138
IC4 KEYS. GEN.
PIN
KEYS. BUFF
KEYS. BUFF
KEYS. BUFF
FROM DA BOARD (DA-11)
+V SAW
-V SAW
+V PARA
-V PARA
RV102 RV104
RV108
RV112
RV121 RV123
RV130 RV132
RV141
RV147
KEYS. R/S
S2
V. KEYS SELECT
RV103
RV109
RV113
RV124
RV131
RV142
6V
RV 1 RV 3
FROM DA BOARD (DA-10)
+H SAW
-H SAW
+H PARA
-H PARA
D3
IC3 HALF H.V
D4
RV114
RV121
RV132
RV139
RV105
RV115
RV122
RV133
RV140
IC7 PIN. GEN
PIN
IC5(2/2) KEYS. PIN. AMP
RV2
V. MAIN PIN
SUB OUT D IC1
DD (R.G.
TO DA BOARD (DA-7)
H MOD
H. SIZE
RV1107
G.V
G.H
RV116 I RV119
R·V
RV125 I RV128
R·H
RV134 I RV137
B·V
RV143 I RV146
B·H
IC101 TILT BUFFER
IC102 TIL P SW
9·10
1-6
S1
VOL
IC402 REMOTE SW-1
D403
+12V
POWI
IC403 REMOTE SW-2
VOL
PIC
BRT
VOL BUFF Q403
12V
RV406 VOL
RV405 PIC
RV404 BRT
D401,404-406
RV401 HUE
HUE 1
HUE 2
HUE 3
IC404 REMOTE SW-3
6,7,8
+28V
D401 15V ZENER
+12V REG IC401
+12V
+15V
+18V REG IC1
+8V
+6V REG Q1,D5
+6V
-15V
-8V REG IC2
+8V
S902 POWER
-15V
PL1
X
DB


TO DA BOARD (DA-7)
BLK GATE -1,-2,-3 D202,204,206
PULSE AMP-2 Q2
PULSE AMP-1 Q1
IC1 SUB OUT DRIVE
V. OUT 2 R,G,B Q203,206,209
V. DRIVE R,G,B Q201,204,207
Dc (R.G.B)
V DY (R)
V DY (G)
V DY (B)
IC4 KEYS. GEN.
PIN
KEYS. BUFF
KEYS. BUFF
KEYS. BUFF
RV147 KEYS. R/S
S2 V. KEYS SELECT
6V
RV 1
RV 3
IC3 HALF H.V
D3
D4
IC7 PIN. GEN
PIN
IC5(2/2) KEYS. PIN. AMP
RV2 V. MAIN PIN
SUB OUT DRIVE IC1
Dd (R.G.B)
H.SUB OUT -1,2 (R) Q303,304
H.SUB OUT -1,2 (G) Q301,302
H.SUB OUT -1,2 (B) Q305, 306
V.SUB OUT -1,2 (R) 309,310
V.SUB OUT -1,2 (G) 307,308
V.SUB OUT 1,2 (B) Q311,312
H.SUB (R)
H.SUB (G)
H.SUB (B)
V. SUB (R)
V. SUB (G)
V. SUB (B)
IC402 REMOTE SW-1
D403
+12V
CTL
TO QA BOARD (QA-6)
POWER SW-1 Q401
POWER SW-2 Q402
S408 PROJECTOR
D413
TO GB BOARD (GB-10)
FROM QA BOARD (QA-5)
9·10
S1
VOL
IC101 T BUFFER
IC102 TIL P SW
IC403 REMOTE SW-2
VOL BUFF Q403
VOL
PIC
BRT
12V
RV406 VOL
RV405 PIC
RV404 BRT
D401,404-406
RV401 HUE
HUE 1
HUE 2
HUE 3
IC404 REMOTE SW-3
RV402 COLOR
12V
RV403 SHARP
S401 INPUT SELECT
-25p-9p
COLOR
SHARP
INPUT
IC405 REMOTE SW-4
COL-OR
SHA-RP
TO BA BOARD (BA-7)
INPUT
TO BB BOARD (BB-12)
HUE 1-3
TO BA BOARD (BA-7)
VOL
TO K BOARD (K-1)
PIC, BRT
TO BB BOARD (BB-12)
VOL, PIC, BRT
FROM QA BOARD (QA-6)

7-4. FRAME SCHEMATIC DIAGRAM


14P MULTI CONNECTOR
QA
(R.G.B SW, AUDIO SELECT, LOGIC, A/D RGB SW)
QB
(VIDEO SW)
X
MASTER SW
GC
(PROTECT)
GA
(POWER SUPPLY)
FB
(RELAY DRIVE)
FC
(LFT)
FA
(RECT)
GB
RGB 2
RGB 1
CN1
CN2
BC
(VIDEO PROCESS)
BD
(APT CTL)
BA
(VIDEO AMP, COMB FILTER, NTSC/PAL Y/CHROMA AMP, SECAM DEMOD, NTSC/PAL DEMOD)
BE
(VD.HD DRIVE H.P GENERATOR)
BF
(PULSE GENERATOR)
(SUPER IMPOSE R.G.B BKG C
BG
(R BIAS CTL)
DD
(SUB OUT DRIVE)
DB
(PIN GEN, V OUT KEYS GEN, KEYS PIN AMP V.H SUB OUT REMOTO SW)
DC
(V OUT)
DA
(AFC CONT, H SIZE CONT, H.V SAW GAIN CONT H.V SYNC GEN, CHANNEL CHENG TRIG, H.V PARA GAIN CONT, TRIGGER GEN)
V DY (G)
V DY (R)
V DY (B)
H SUB (G)
H SUB (R)
H SUB (B)
V SUB(G)
V SUB(R)
V SUB(B)
H DY (R)
H DY (G)
H DY (B)
S902 POWER
R901 2.7 (15W)
100~127V 220~240V
AC IN

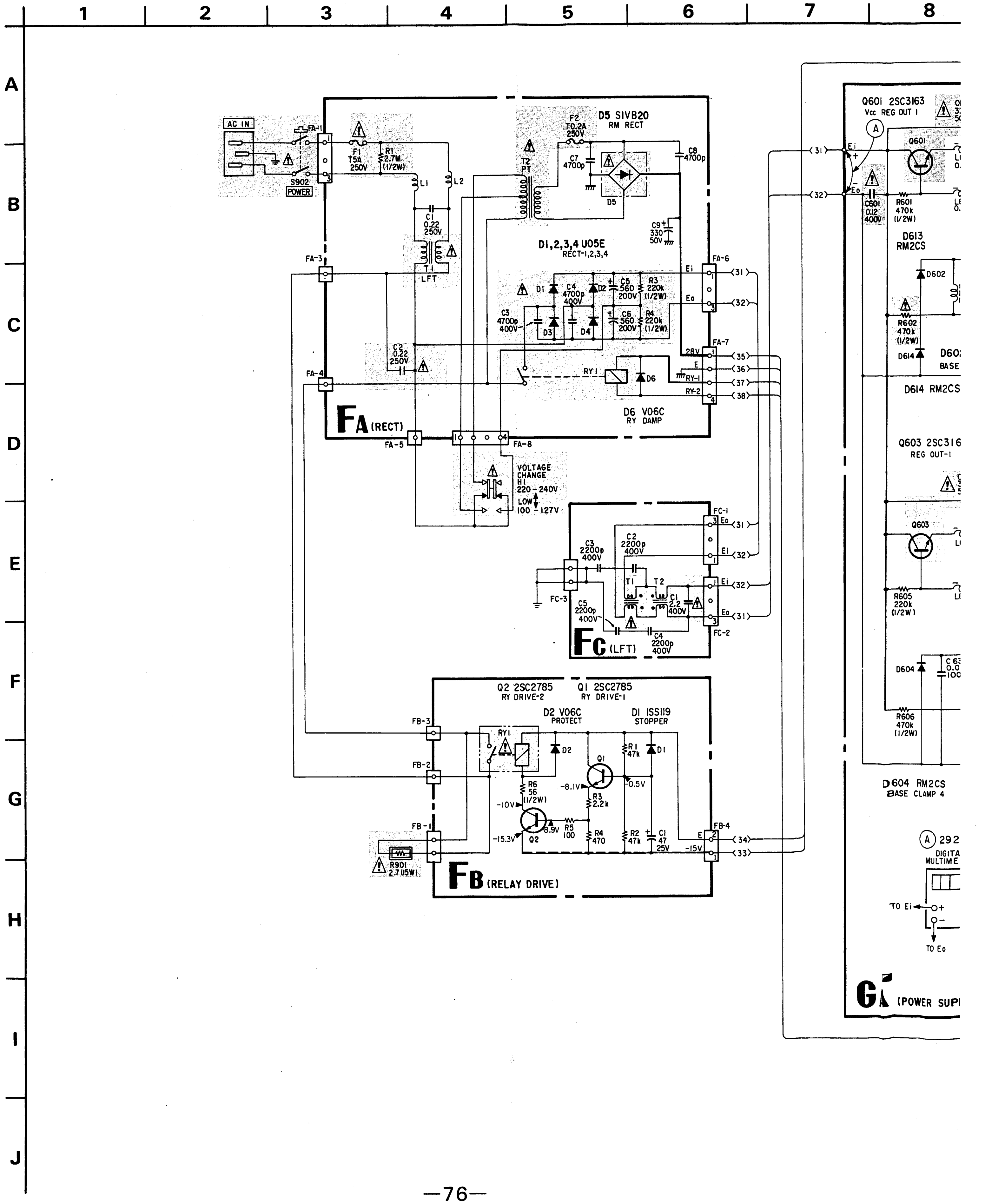

BB
(SUPER IMPOSE, RGB DRIVE CTL, RGB BRT CTL
R.G.B BKG CTL, SYNC MODE CTL, RGB AMP)
BG (R BIAS CTL)
BG (G BIAS CTL)
BG (B BIAS CTL)
BH (PULSE GEN)
BI (WB GEN)
FAN 1
FAN 2
K (AUDIO OUT)
SP901
SP902
CAB (B OUT)
CAG (G OUT)
CAR (R OUT)
CBB
CBG
CBR
V901 PICTURE TUBE (B)
V901 PICTURE TUBE (G)
V901 PICTURE TUBE (R)
EC
EC
EC
CHASSIS EARTH
EA
(HV REG, H OUT, H CONV
HV REG DRIVE, PIN MOD)
Q1 PIN MOD OUT
Q4 HV REG 2
Q3 HV REG 1
Q2 H.OUT
Q5 H.CONV OUT
Y (IND)
T901 FBT
HVR
EB
DC BLOCK
FOCUS OUT
HV OUT
W GAIN CONT
HENG TRIG,
IGGER GEN

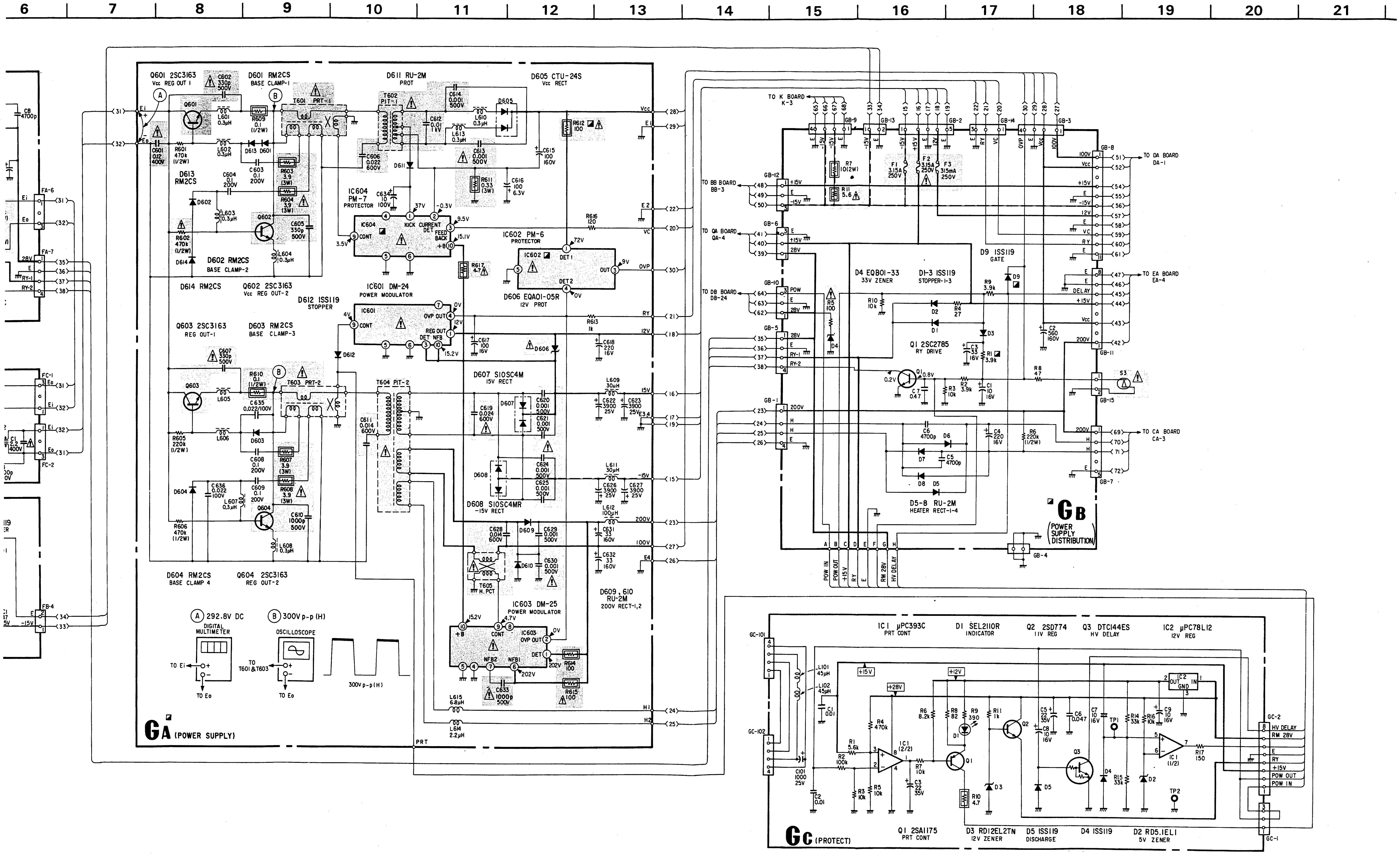
7-5. SCHEMATIC DIAGRAMS

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- All Capacitors are in μF unless otherwise noted, p : $\mu\mu$F 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, 1/4W unless otherwise noted.
  kΩ = 1000Ω, MΩ = 1000kΩ
- -▭- : nonflamable resistor.
- △ : internal component.
- ▭ : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ▣ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪ mark the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ▣ and repeat the adjustment until the specified value is achieved.
  (Refer to HV HOLD DOWN, HV REG, BEAM CURRENT, VCC REG, and OVP CIRCUIT CHECK on page 35 ~ 42.)
- When replacing the part in below table, be sure to perform the related adjustment.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10MΩ digital multimeter.
- ▭ : adjustment for repair.
- Readigns are taken with color-bar signal input.
  no mark : VIDEO signal mode.
  (   ) : HI-SCAN mode.
- Voltage variations may be noted due to normal production tolerances.
- ▭ : B + bus.
- ▭ : B − bus.
- Circled numbers are waveform references.
- ⁕ Selected to yield optimum performance.

Part replaced (◪)	Adjustment
EA board complete, D8, D23, IC2, IC3, Q7, Q8, R23, R24, R28, R29, R31, R32, R33, R34, R38, R40, R82, R83 } on EA board HV BLOCK	HV HOLD DOWN ADJUSTMENT (R82, R83)
EA board complete, C36, C37, C39, C40, D17, D18, D19, D20, Q4, Q15, Q16, Q17, R65, R68, R70, R71, R72, R73, R74, R75 R84, R85 } on EA board EB board mount, T1 ---------- on EB board HV BLOCK	HV REG (R84, R85)
EA board complete, C20, D23, IC3, Q7 Q8, R32, R33, R34, R38, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50 } on EA board BB board complete, R249 -------- on BB board	BEAM CURRENT PROTECTOR (R43)
GA board complete, IC604 -------- on GA board DA board complete, D14, IC7, Q14, R61, R69, R70, R73, R74, R75, R76, R77, R78 } on DA board	Vcc REG (R78)
GA board complete, IC602, R612 ----- on GA board GB board mount, D9, R1 -------- on GB board EA board complete, D24, Q7, Q8, Q19, R32, R33, R35, R86, R88 } on EA board	OVP CIRCUIT CHECK


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
AC IN
FA-1
S902
POWER
F1
T5A
250V
R1
2.7M
(1/2W)
L1
L2
C1
0.22
250V
T1
LFT
FA-3
FA-4
C2
0.22
250V
T2
PT
F2
T0.2A
250V
D5 SIVB20
RM RECT
C7
4700p
C8
4700p
D5
C9
330
50V
D1,2,3,4 U05E
RECT-1,2,3,4
D1
C4
4700p
400V
D2
C5
560
200V
R3
220k
(1/2W)
C3
4700p
400V
D3
D4
C6
560
200V
R4
220k
(1/2W)
Ei
Eo
FA-6
FA-7
28V
E
RY-1
RY-2
RY1
D6
D6 V06C
RY DAMP
FA (RECT)
FA-5
FA-8
VOLTAGE
CHANGE
HI
220 - 240V
LOW
100 - 127V
FC-1
FC-2
FC-3
C3
2200p
400V
C2
2200p
400V
T1
T2
C1
2.2
400V
C5
2200p
400V
C4
2200p
400V
FC (LFT)
Q2 2SC2785
RY DRIVE-2
Q1 2SC2785
RY DRIVE-1
D2 V06C
PROTECT
D1 ISS119
STOPPER
FB-3
FB-2
FB-1
FB-4
RY1
D2
Q1
R1
47k
D1
R6
56
(1/2W)
-8.1V
-0.5V
-10V
R3
2.2k
R5
100
-15.3V
8.9V
Q2
R4
470
R2
47k
C1
47
25V
-15V
E
R901
2.7(15W)
FB (RELAY DRIVE)
31
32
33
34
35
36
37
38
Q601 2SC3163
Vcc REG OUT 1
A
Q601
C601
0.12
400V
R601
470k
(1/2W)
D613
RM2CS
D602
R602
470k
(1/2W)
D614
BASE
D614 RM2CS
Q603 2SC316
REG OUT-1
Q603
R605
220k
(1/2W)
D604
R606
470k
(1/2W)
D604 RM2CS
BASE CLAMP 4
A 292
DIGITA
MULTIME
TO Ei
TO Eo
G (POWER SUP


6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
Q601 2SC3163 Vcc REG OUT 1
D601 RM2CS BASE CLAMP-1
D611 RU-2M PROT
D605 CTU-24S Vcc RECT
T601 PRT-1
T602 PIT-1
D613 RM2CS
D602 RM2CS BASE CLAMP-2
D614 RM2CS
Q602 2SC3163 Vcc REG OUT-2
IC604 PM-7 PROTECTOR
IC601 DM-24 POWER MODULATOR
IC602 PM-6 PROTECTOR
D606 EQA01-05R 12V PROT
D612 1SS119 STOPPER
Q603 2SC3163 REG OUT-1
D603 RM2CS BASE CLAMP-3
T603 PRT-2
T604 PIT-2
D607 S10SC4M 15V RECT
D608 S10SC4MR -15V RECT
D604 RM2CS BASE CLAMP 4
Q604 2SC3163 REG OUT-2
T605 H. PCT
IC603 DM-25 POWER MODULATOR
D609, 610 RU-2M 200V RECT-1,2
Ⓐ 292.8V DC
Ⓑ 300V p-p (H)
DIGITAL MULTIMETER
OSCILLOSCOPE
TO Ei
TO Eo
TO T601 & T603
300V p-p (H)
GA (POWER SUPPLY)
PRT
TO K BOARD K-3
TO BB BOARD BB-3
TO QA BOARD QA-4
TO DB BOARD DB-24
TO DA BOARD DA-1
TO EA BOARD EA-4
TO CA BOARD CA-3
D4 EQB01-33 33V ZENER
D1-3 1SS119 STOPPER-1-3
D9 1SS119 GATE
Q1 2SC2785 RY DRIVE
D5-8 RU-2M HEATER RECT-1-4
GB (POWER SUPPLY DISTRIBUTION)
POW IN
POW OUT
+15V
RY
RM 28V
HV DELAY
IC1 μPC393C PRT CONT
D1 SEL2110R INDICATOR
Q2 2SD774 11V REG
Q3 DTC144ES HV DELAY
IC2 μPC78L12 12V REG
Q1 2SA1175 PRT CONT
D3 RD12EL2TN 12V ZENER
D5 1SS119 DISCHARGE
D4 1SS119
D2 RD5.1EL1 5V ZENER
GC (PROTECT)

7-6. PRINTED WIRING BOARDS

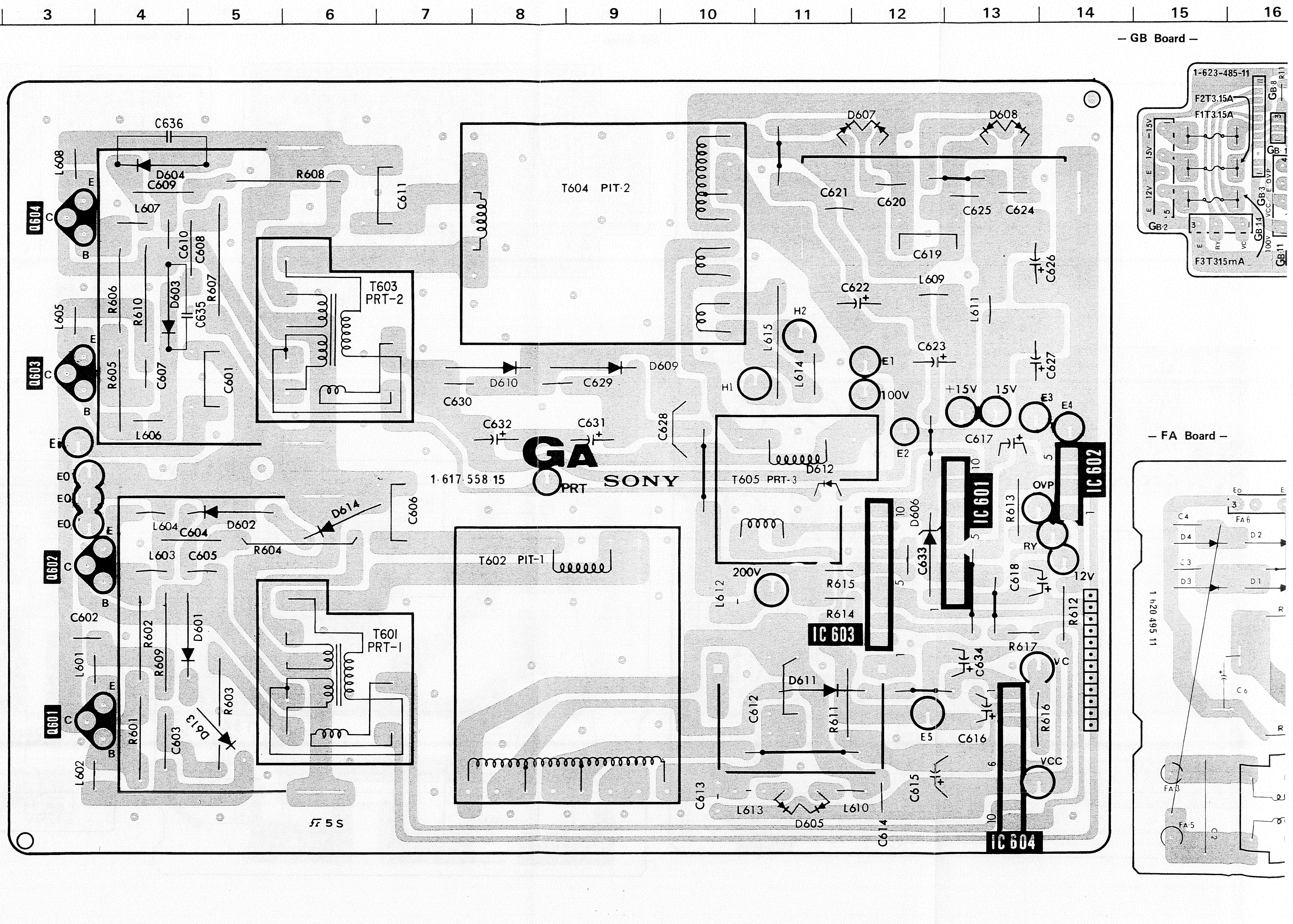
– Conductor Side –

GA [POWER SUPPLY]

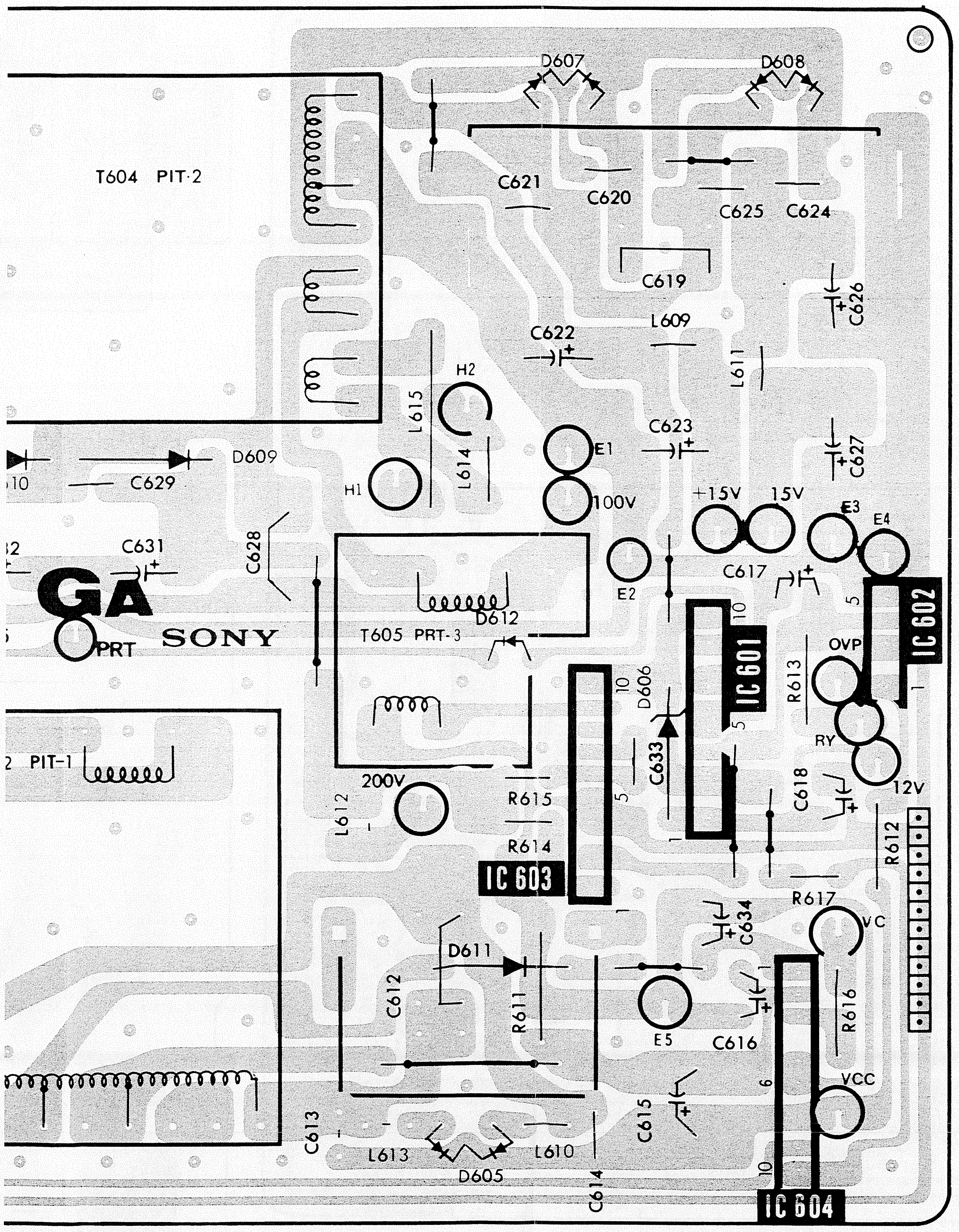
GB [POWER SUPPLY DISTRIBUTION]

– GA Board –

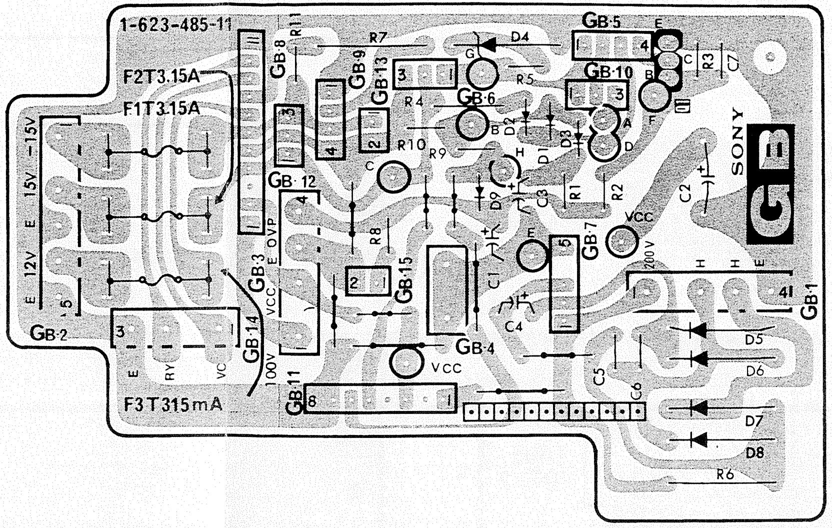
IC , Q	D
	607 608
	607,608
	604
604	
	603
603	610 609
IC602	612
	602
IC601	614
	606
602	
IC603	
	601
	611
601	
	613
IC604	
	605


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
– GB Board –
– FA Board –
C636
L608
D604
C609
R608
C611
Q604
L607
C610
C608
R606
R610
D603
C635
R607
T603
PRT-2
T604 PIT-2
D607
D608
C621
C620
C625
C624
C619
C626
C622
L609
L611
L605
Q603
R605
C607
C601
L606
D610
C630
C629
D609
L615
H2
L614
H1
E1
100V
C623
C627
+15V
15V
E3
E4
C632
C631
C628
GA
1-617-558 15
PRT
SONY
T605 PRT-3
D612
E2
C617
IC601
IC602
OVP
D614
C606
L604
C604
D602
Q602
L603
C605
R604
T602 PIT-1
200V
D606
C633
R613
RY
L612
R615
R614
IC603
C618
12V
R612
C602
R602
D601
R609
L601
T601
PRT-1
C634
R617
VC
D611
R603
D613
Q601
R601
C603
C612
R611
E5
C616
R616
L602
C615
VCC
C613
L613
D605
L610
C614
IC604
ℱ5S
E0
1-623-485-11
F2T3.15A
F1T3.15A
F3T315mA
GB-8
GB-2
GB-3
GB-14
GB-11
15V
-15V
12V
E
RY
VCC
OVP
100V
C4
D4
D3
D2
D1
FA6
FA3
FA5
E0
1-620 495 11
C6
C2

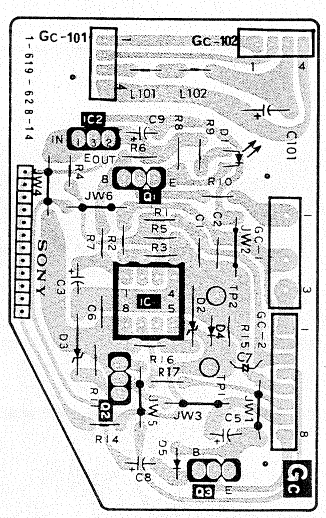
GB [POWER SUPPLY DISTRIBUTION] **FA** [RECT] **GC** [PROTECT] **FB** [RELAY DRIVE] **FC** [LFT]


T604 PIT-2
D607
D608
C621
C620
C625
C624
C619
C626
C622
L609
L611
C623
C627
H2
L615
L614
H1
E1
100V
D609
C629
+15V
15V
E3
E4
C631
C628
E2
C617
GA
SONY
PRT
T605 PRT-3
D612
IC601
IC602
OVP
D606
C633
R613
RY
PIT-1
200V
R615
R614
IC603
L612
C618
12V
R612
R617
C634
VC
D611
C612
R611
E5
C616
R616
VCC
C613
L613
D605
L610
C614
C615
IC604

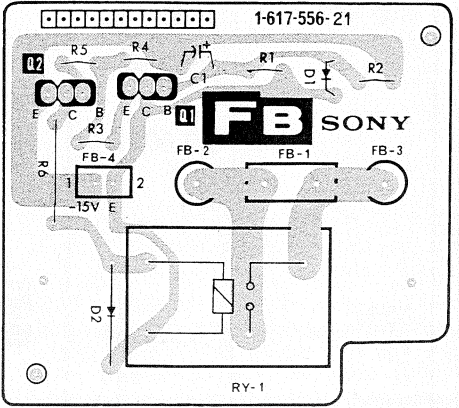
— GB Board —


1-623-485-11
F2T3.15A
F1T3.15A
F3T315mA
GB-2
GB-3
GB-5
GB-6
GB-7
GB-8
GB-9
GB-10
GB-11
GB-12
GB-13
GB-14
GB-15
GB-4
GB-1
D4
D5
D6
D7
D8
R7
R5
R4
R10
R9
R8
R1
R2
R3
R6
R11
C1
C2
C4
C5
C6
C7
VCC
200V
SONY
GB

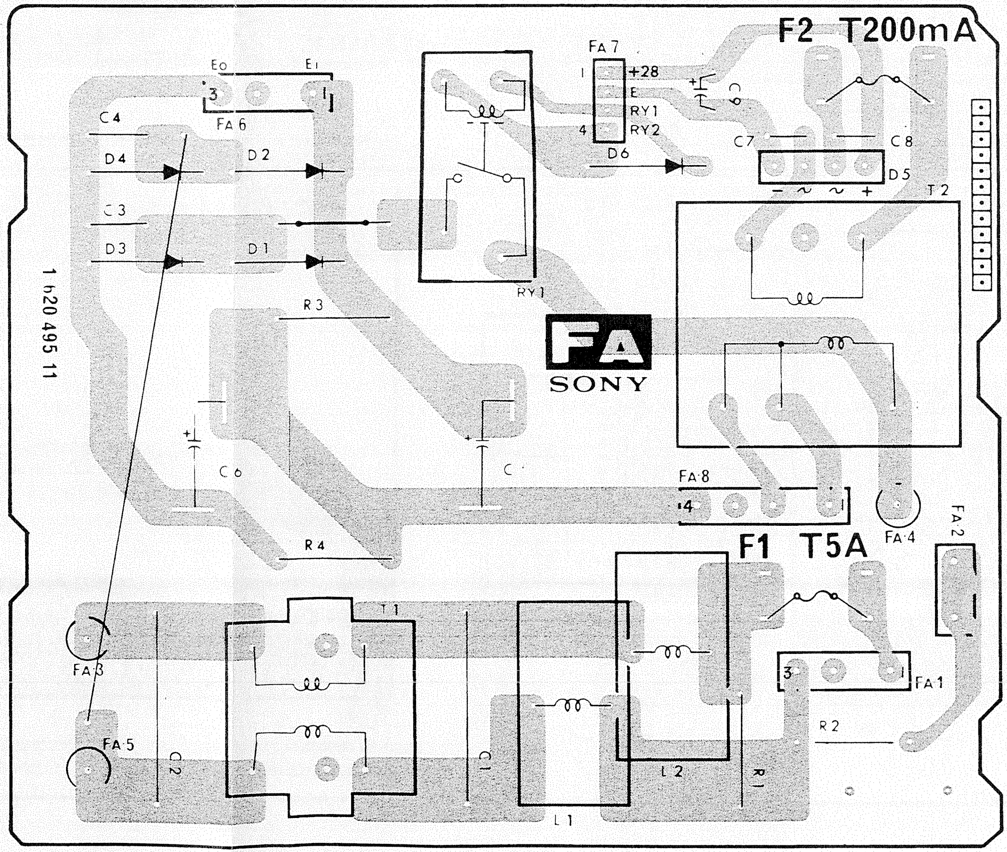
— GC Board —


Gc-101
Gc-102
L101
L102
IC2
IC1
C101
JW6
JW2
JW3
JW5
JW1
R10
R5
R3
R16
R17
R14
TP2
SONY
Q3
Gc

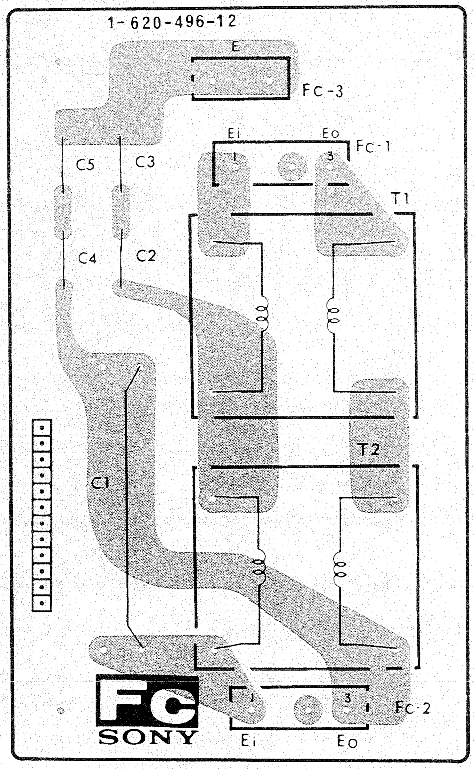
— FB Board —

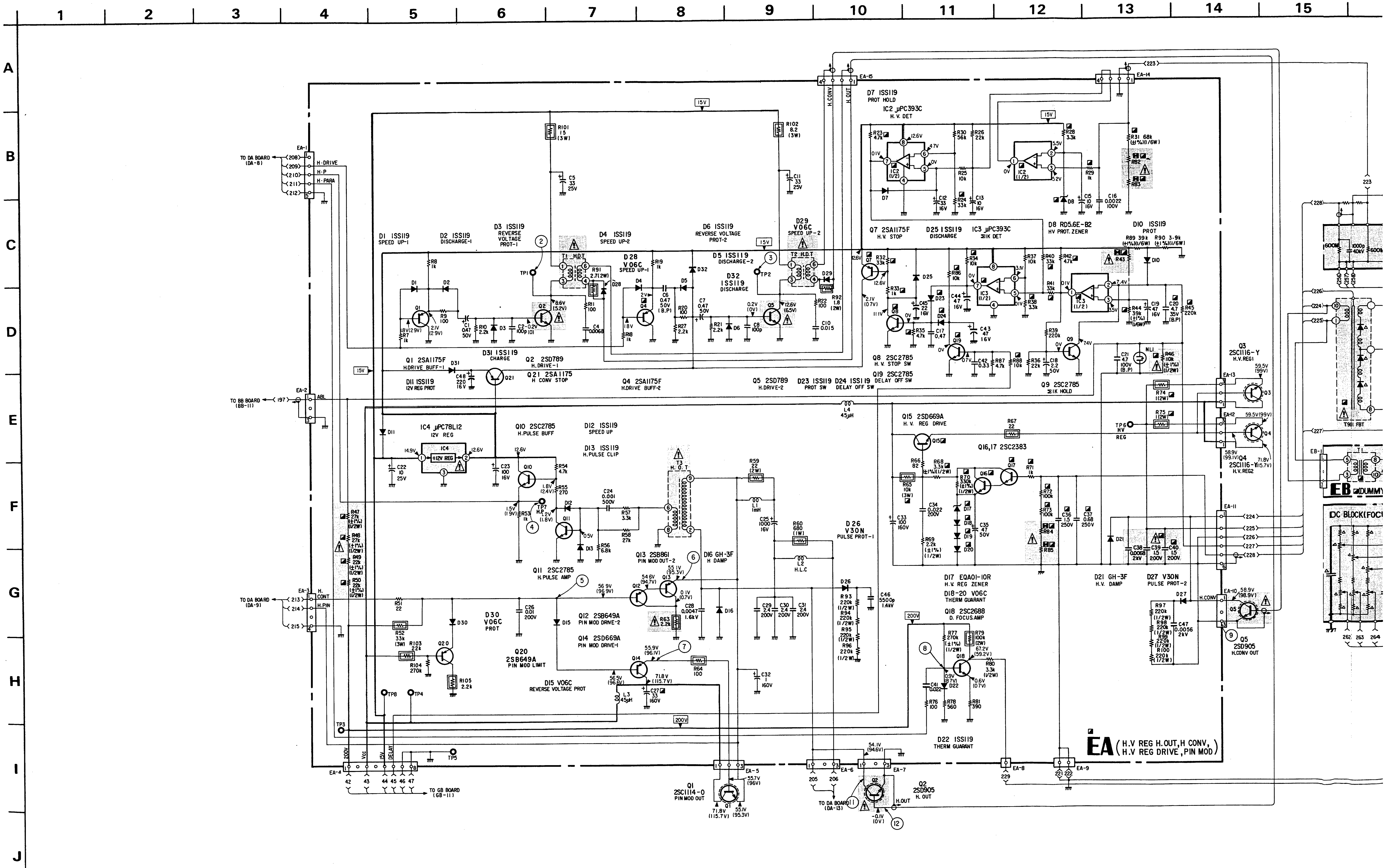

1-617-556-21
Q2
R5
R4
R1
R2
R3
C1
D1
Q1
FB
SONY
FB-4
FB-2
FB-1
FB-3
R6
-15V E
D2
RY-1

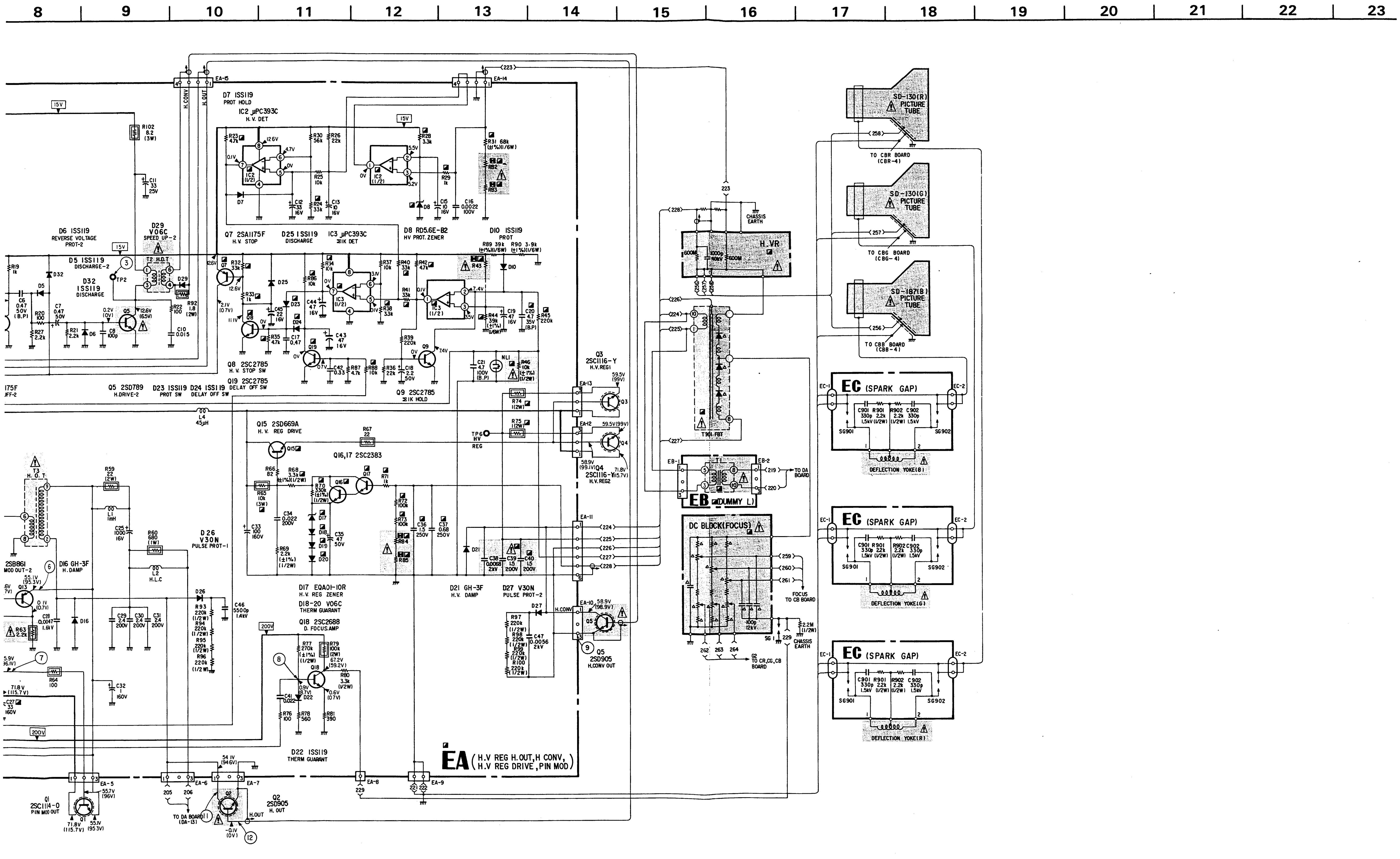
— FA Board —


F2 T200mA
FA7
+28
E
RY1
RY2
D6
C9
C7
C8
D5
T2
C4
FA6
D4
D2
C3
D3
D1
1-620-495-11
RY1
R3
FA
SONY
C6
FA8
FA4
FA2
F1 T5A
R4
T1
FA3
FA5
C2
C1
L1
L2
R1
R2
FA1

— FC Board —


1-620-496-12
Fc-3
Fc-1
C5
C3
C4
C2
T1
C1
T2
Fc
SONY
Ei
Eo
Fc-2


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
EA (H.V REG H.OUT, H CONV, H.V REG DRIVE, PIN MOD)
TO DA BOARD (DA-8)
H-DRIVE
H-P
H-PARA
TO BB BOARD (BB-11)
ABL
TO DA BOARD (DA-9)
H.CONT
H.PIN
TO GB BOARD (GB-11)
TO DA BOARD (DA-13)
D1 1SS119 SPEED UP-1
D2 1SS119 DISCHARGE-1
D3 1SS119 REVERSE VOLTAGE PROT-1
D4 1SS119 SPEED UP-2
D6 1SS119 REVERSE VOLTAGE PROT-2
D5 1SS119 DISCHARGE-2
D28 V06C SPEED UP-1
D29 V06C SPEED UP-2
D32 1SS119 DISCHARGE
T1 H.D.T
T2 H.D.T
T3 H. O. T
Q1 2SA1175F H.DRIVE BUFF-1
D31 1SS119 CHARGE
Q2 2SD789 H.DRIVE-1
Q21 2SA1175 H CONV STOP
D11 1SS119 12V REG PROT
Q4 2SA1175F H.DRIVE BUFF-2
Q5 2SD789 H.DRIVE-2
D23 1SS119 PROT SW
D24 1SS119 DELAY OFF SW
IC4 μPC78L12 12V REG
Q10 2SC2785 H.PULSE BUFF
D12 1SS119 SPEED UP
D13 1SS119 H.PULSE CLIP
Q11 2SC2785 H.PULSE AMP
Q13 2SB861 PIN MOD OUT-2
D16 GH-3F H DAMP
D26 V30N PULSE PROT-1
D30 V06C PROT
Q12 2SB649A PIN MOD DRIVE-2
Q14 2SD669A PIN MOD DRIVE-1
Q20 2SB649A PIN MOD LIMIT
D15 V06C REVERSE VOLTAGE PROT
Q1 2SC1114-0 PIN MOD OUT
Q2 2SD905 H. OUT
D7 1SS119 PROT HOLD
IC2 μPC393C H. V. DET
Q7 2SA1175F H.V. STOP
D25 1SS119 DISCHARGE
IC3 μPC393C ΞIK DET
D8 RD5.6E-B2 HV PROT. ZENER
D10 1SS119 PROT
Q8 2SC2785 H. V. STOP SW
Q19 2SC2785 DELAY OFF SW
Q9 2SC2785 ΞIK HOLD
Q15 2SD669A H. V. REG DRIVE
Q16,17 2SC2383
D17 EQA01-10R H.V. REG ZENER
D18-20 V06C THERM GUARANT
Q18 2SC2688 D. FOCUS.AMP
D22 1SS119 THERM GUARANT
D21 GH-3F H.V. DAMP
D27 V30N PULSE PROT-2
Q3 2SC1116-Y H.V.REG1
Q4 2SC1116-Y H.V.REG2
Q5 2SD905 H.CONV OUT
TP6 HV REG
T911 FBT
EB DUMMY
DC BLOCK(FOCU
15V
200V
EA-1
EA-2
EA-3
EA-4
EA-5
EA-6
EA-7
EA-8
EA-9
EA-10
EA-11
EA-12
EA-13
EA-14
EA-15
EB-1
H.CONV
H.OUT
TP1
TP2
TP3
TP4
TP5
TP7
TP8
200V
Vcc
15V
DELAY

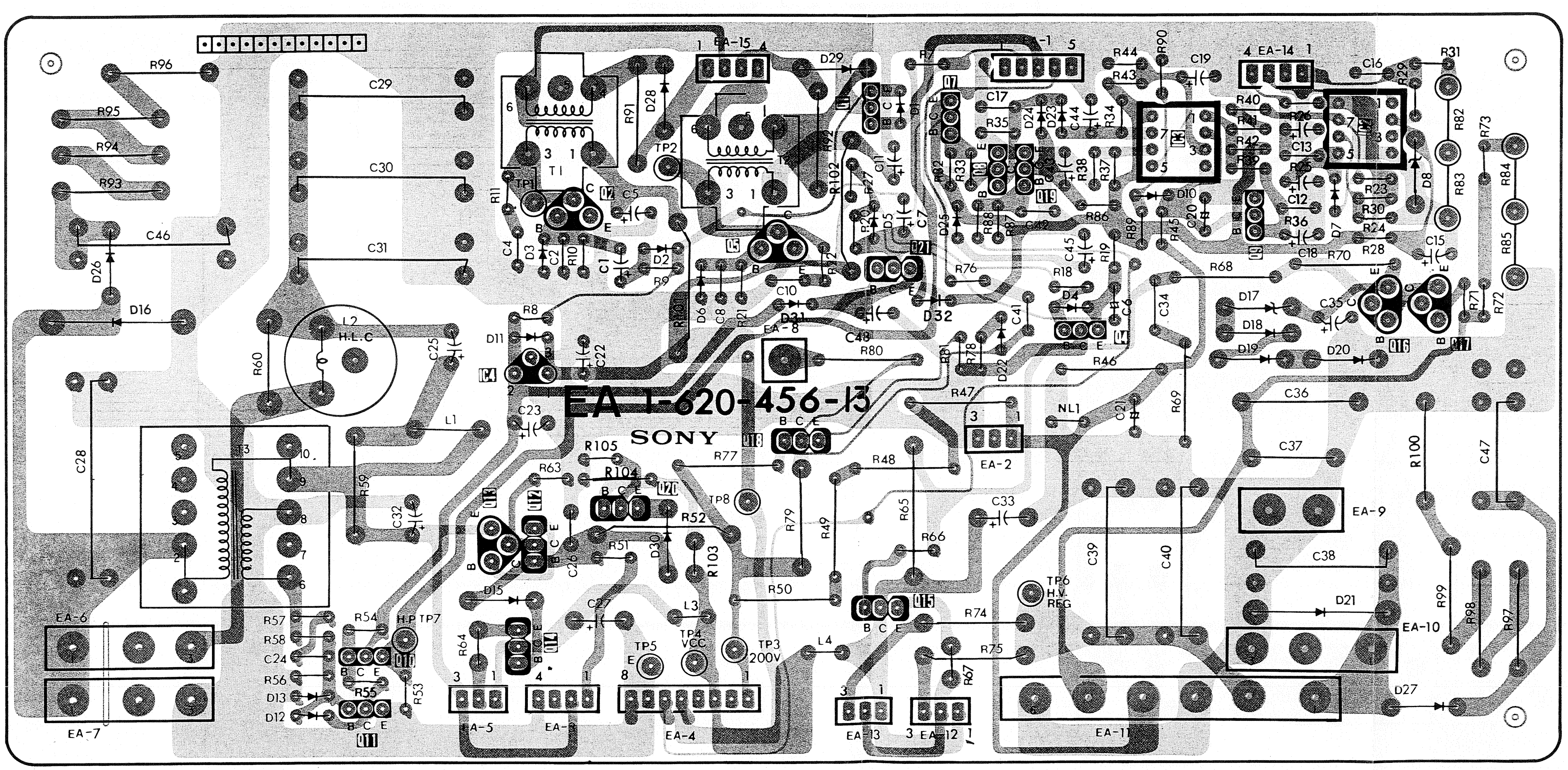

8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
EA-15
H.CONV
H.OUT
EA-14
223
15V
R102 8.2 (3W)
C11 33 25V
D7 1SS119 PROT HOLD
IC2 μPC393C H.V. DET
R23 4.7k
R30 56k
R26 22k
R28 3.3k
R31 68k (±1%)(1/6W)
RB2
RB3
IC2 (1/2)
R25 10k
C12 33 16V
R24 33k
C13 10 16V
D8
C15 10 16V
C16 0.0022 100V
R29 1k
D6 1SS119 REVERSE VOLTAGE PROT-2
D29 V06C SPEED UP-2
Q7 2SA1175F H.V. STOP
D25 1SS119 DISCHARGE
IC3 μPC393C ≧IK DET
D8 RD5.6E-B2 HV PROT. ZENER
D10 1SS119 PROT
R89 39k (±1%)(1/6W)
R90 3.9k (±1%)(1/6W)
D5 1SS119 DISCHARGE-2
D32 1SS119 DISCHARGE
T2 H.D.T
TP2
R19 1k
C6 0.47 50V (B.P)
R20 100
R27 2.2k
C7 0.47 50V
R21 2.2k
C8 100p
Q5
R22 100
R92 1.8 (2W)
C10 0.015
R32 33k
R33 1k
R34 10k
R86 10k
C44 47 16V
IC3 (1/2)
R37 10k
R40 33k
R42 47k
R41 33k
R38 33k
R43
R44 39k (±1%) (1/6W)
C19 47 16V
C20 4.7 35V (B.P)
R45 220k
C45 22 16V
D23
D24
R35 4.7k
C17 0.47
Q8
Q19
C43 47 16V
C42 0.33
R87 4.7k
R88 10k
R36 22k
C18 2.2 50V
R39 220k
Q9
C21 4.7 100V (B.P)
NL1
R46 10k (±1%) (1/2W)
Q8 2SC2785 H.V. STOP SW
Q19 2SC2785 DELAY OFF SW
Q9 2SC2785 ≧IK HOLD
175F
Q5 2SD789 H.DRIVE-2
D23 1SS119 PROT SW
D24 1SS119 DELAY OFF SW
L4 45μH
R74 1(2W)
R75 1(2W)
Q3 2SC1116-Y H.V.REG1
59.5V (99V)
EA-13
EA-12
TP6 HV REG
Q4 2SC1116-Y H.V.REG2
58.9V (99.1V)
71.8V (115.7V)
Q15 2SD669A H. V. REG DRIVE
R67 22
Q16,17 2SC2383
R66 82
R68 3.3k (±1%)(1/2W)
R70 330k (±1%) (1/2W)
R71 1k
R72 100k
R73 100k
R65 10k (3W)
C33 100 160V
C34 0.022 200V
D17
D18
D19
D20
C35 47 50V
C36 1.5 250V
C37 0.68 250V
R84
R85
R69 2.2k (±1%) (1/2W)
D21
C38 0.0068 2kV
C39 1.5 200V
C40 1.5 200V
EA-11
224
225
226
227
228
T3 H.O.T.
R59 22 (2W)
L1 1mH
C25 1000 16V
R60 680 (1W)
L2 H.L.C
D26 V30N PULSE PROT-1
2SB861 MOD OUT-2
D16 GH-3F H.DAMP
Q13
C28 0.0047 1.6kV
D16
R63 2.2k
C29 2.4 200V
C30 2.4 200V
C31 2.4 200V
D26
R93 220k (1/2W)
R94 220k (1/2W)
R95 220k (1/2W)
R96 220k (1/2W)
C46 5500p 1.4kV
D17 EQA01-10R H.V. REG ZENER
D18-20 V06C THERM GUARANT
Q18 2SC2688 D. FOCUS AMP
D21 GH-3F H.V. DAMP
D27 V30N PULSE PROT-2
R97 220k (1/2W)
R98 220k (1/2W)
R99 220k (1/2W)
R100 220k (1/2W)
C47 0.0056 2kV
D27
EA-10
58.9V (98.9V)
Q5 2SD905 H.CONV OUT
R64 100
C32 1 160V
C27 33 160V
200V
R77 270k (±1%) (1/2W)
R79 100k (2W)
R80 3.3k (1/2W)
67.2V (59.2V)
C41 0.022
D22
R76 100
R78 560
R81 390
D22 1SS119 THERM GUARANT
EA (H.V REG H.OUT, H CONV, H.V REG DRIVE, PIN MOD)
EA-5
EA-6
EA-7
EA-8
EA-9
205
206
229
221
222
54 1V (94.6V)
Q1 2SC1114-O PIN MOD OUT
55.7V (96V)
71.8V (115.7V)
55.1V (95.3V)
TO DA BOARD (DA-13)
Q2 2SD905 H. OUT
-0.1V (0V)
228
CHASSIS EARTH
H.VR
600M
1000p 10kV
600M
226
224
225
227
T901 FBT
EB-1
EB-2
T1
EB (DUMMY L)
219
220
TO DA BOARD
DC BLOCK(FOCUS)
259
260
261
FOCUS TO CB BOARD
100p 12kV
2.2M (1/2W)
CHASSIS EARTH
262
263
264
SG1
G2 TO CR,CG,CB BOARD
SD-130(R) PICTURE TUBE
258
TO CBR BOARD (CBR-4)
SD-130(G) PICTURE TUBE
257
TO CBG BOARD (CBG-4)
SD-167(B) PICTURE TUBE
256
TO CBB BOARD (CBB-4)
EC (SPARK GAP)
EC-1
EC-2
C901 330p 1.5kV
R901 2.2k (1/2W)
R902 2.2k (1/2W)
C902 330p 1.5kV
SG901
SG902
DEFLECTION YOKE(B)
DEFLECTION YOKE(G)
DEFLECTION YOKE(R)

EA [H.V REG H. OUT, H CONV, H.V REG DRIVE, PIN MOD]

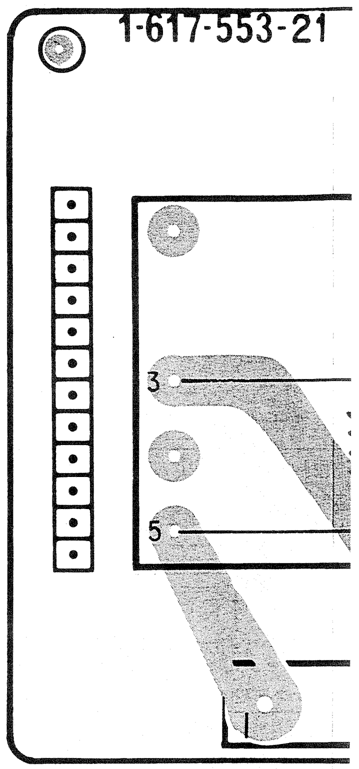
EB [DUMMY L]

– EA Board –

	1	2	3	4	5	6	7	8	9	10	11	12	13
IC · Q				10 11	IC4 13 12 14	2 20	5	18 1 21 15	7 8 19	4	IC3 9	IC2 16	17
D		26 16		13 12	3 15 11		28 2 30 6	31 29 5 1	25 32 22	24,23 4	10	17 18 19 7 21 20	8 27
TP				7		5	2 4 3 8			6			


EA 1-620-456-13
SONY
EA-1
EA-2
EA-3
EA-4
EA-5
EA-6
EA-7
EA-8
EA-9
EA-10
EA-11
EA-12
EA-13
EA-14
EA-15
T1
T3
L1
L2
H.L.C
L3
L4
NL1
TP1
TP2
TP3 200V
TP4 VCC
TP5
TP6 H.V. REG
TP7 H.P
TP8
C29
C30
C31
C46
R96
R95
R94
R93
D16
D26
R60
C28
R59
C32

– EB Board –


1-617-553-21
3
5

● ▨ : Conductor side pattern

● ░ : Component side pattern

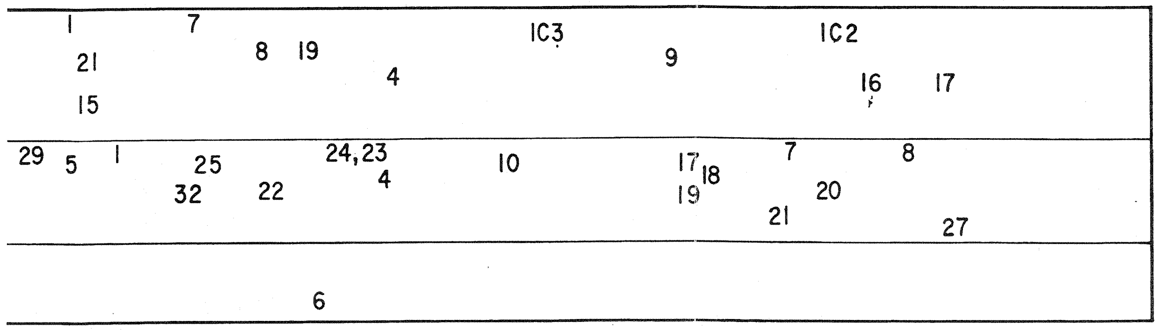
EB [DUMMY L]

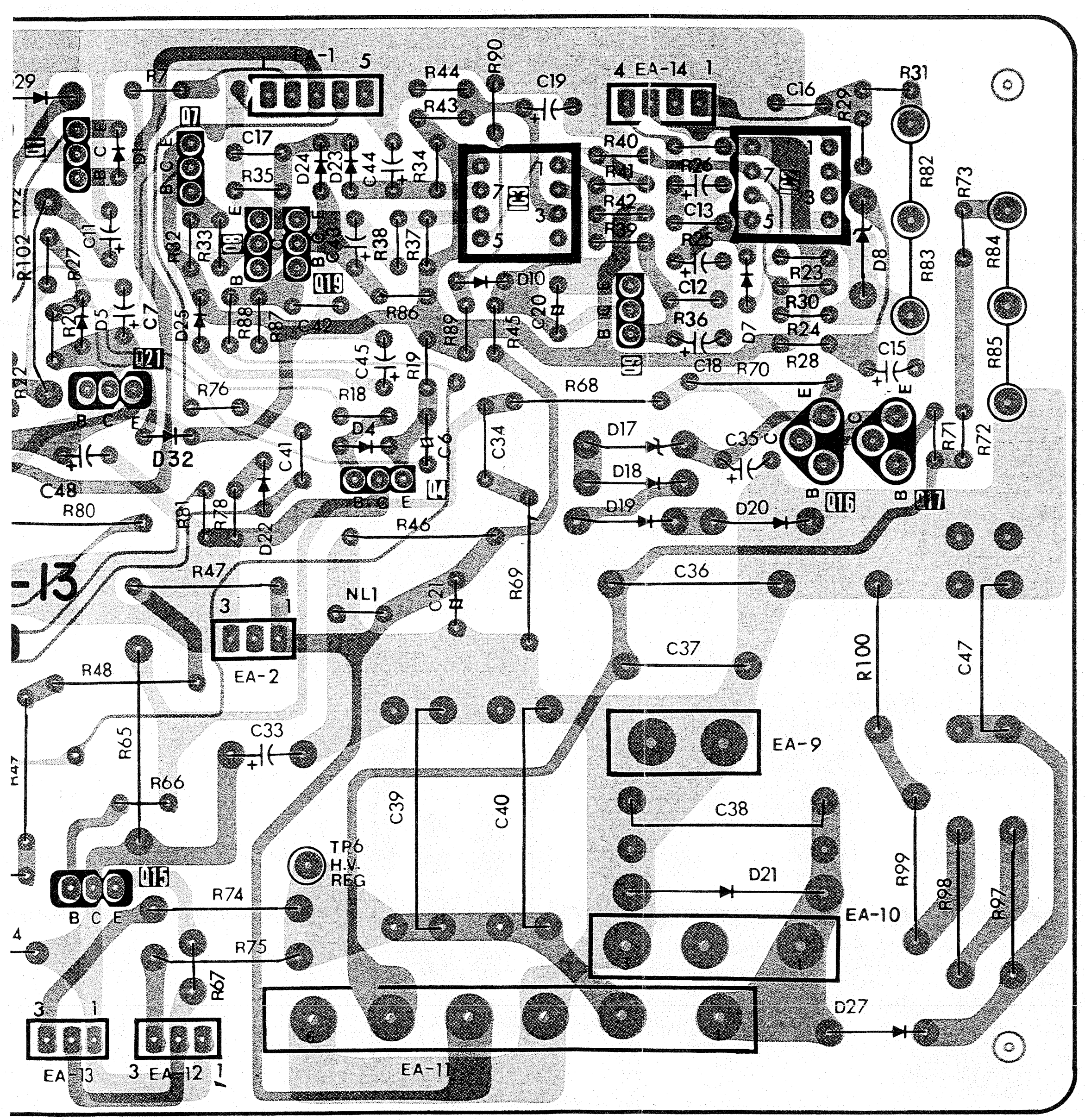
EC [SPARK GAP]

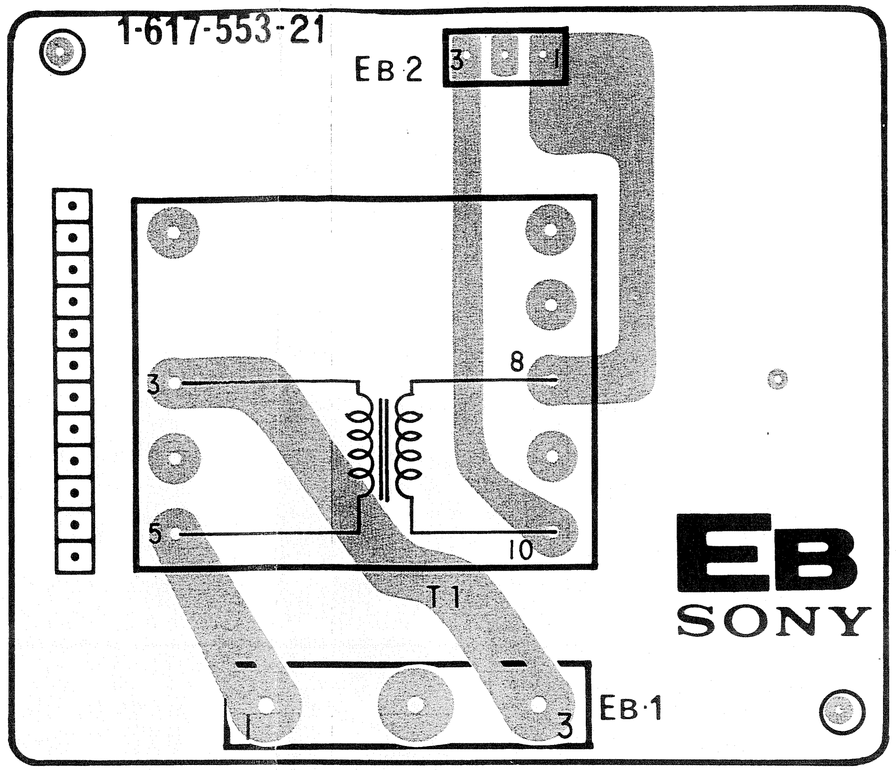
8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23

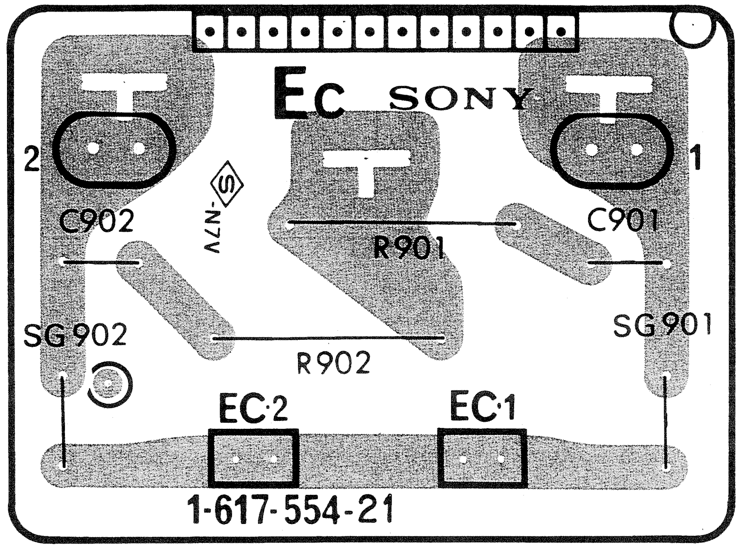
– EB Board –

– EC Board –

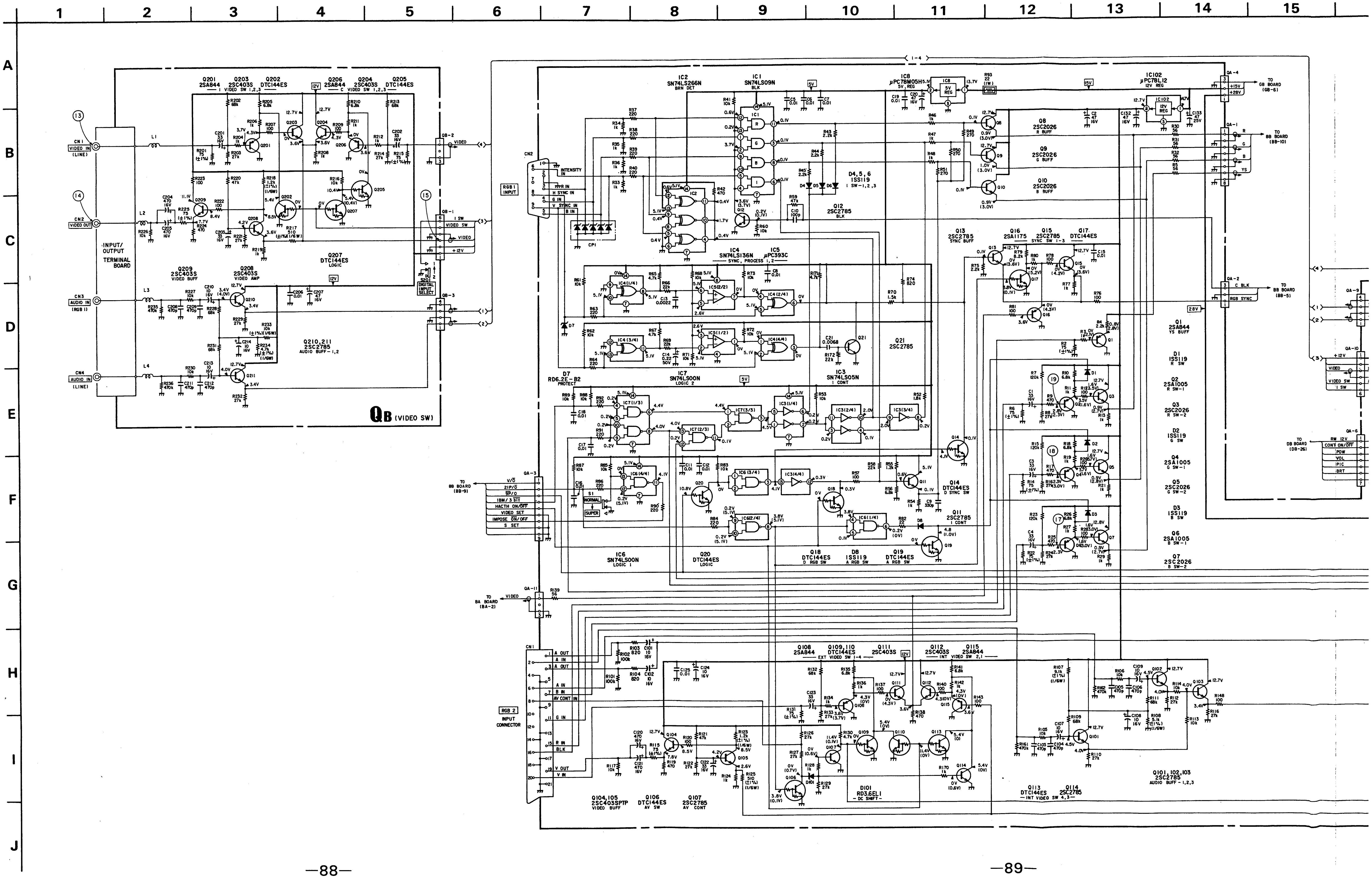

1
7
8
19
21
15
4
IC3
9
IC2
16
17
29
5
1
25
24,23
4
10
17
18
19
7
8
32
22
20
21
27
6

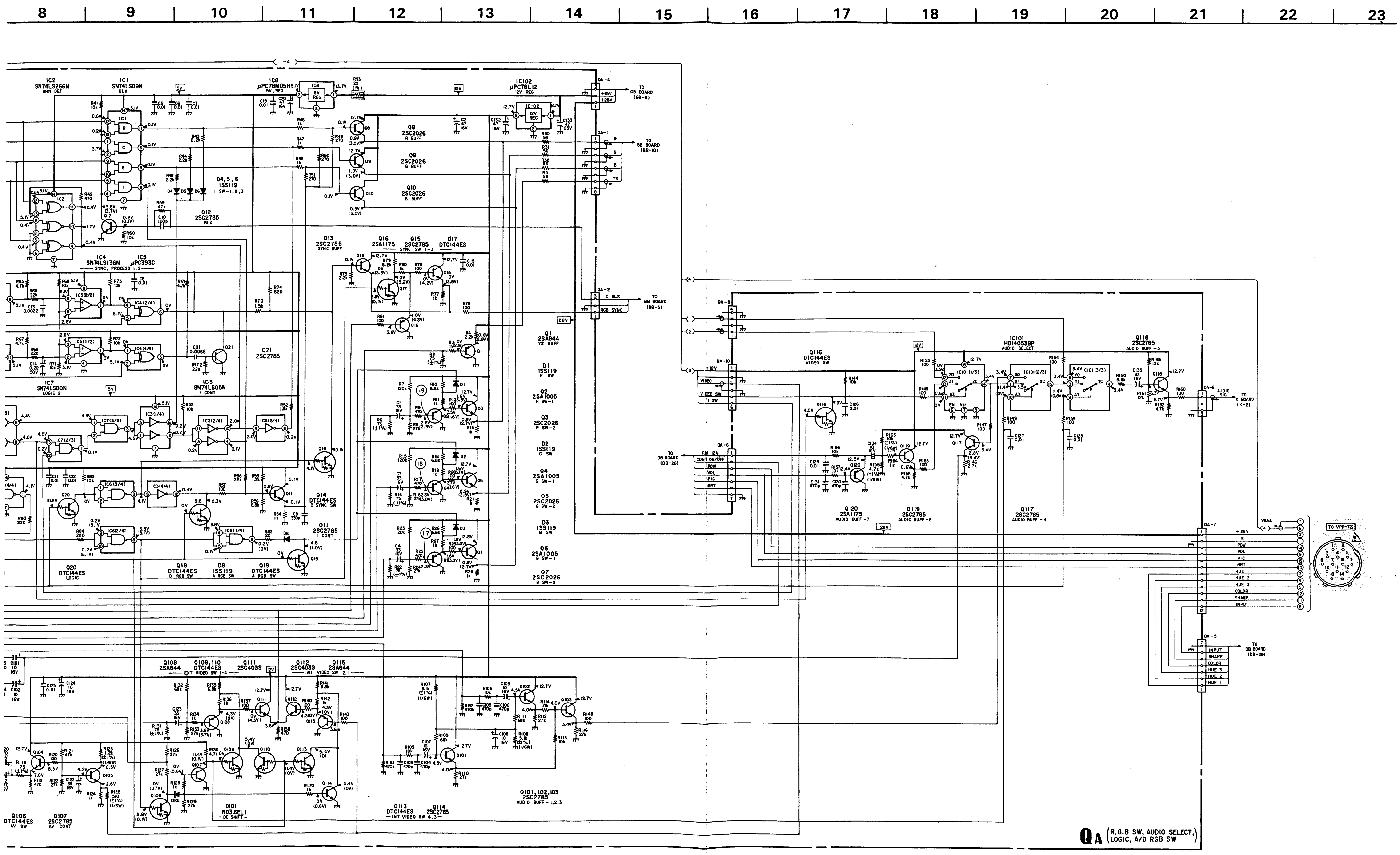

29
R7
EA-1 5
R44
R90
C19
4 EA-14 1
C16
R31
R29
R43
C17
R35
D24
D23
C44
R34
R40
R41
R42
R39
C13
R26
R82
R73
R102
R27
C11
R32
R33
R38
R37
Q19
D10
D8
R84
R83
R23
R30
C12
R20
D5
C7
D25
R88
R87
R86
R80
R45
C20
R36
R24
D7
R28
C15
R85
D21
R76
C45
R18
R19
C18
R70
R68
B C E
D32
C41
D4
C6
C34
D17
D18
C35
Q16
Q17
R71
R72
C48
R80
R81
R78
D22
R46
D19
D20
-13
R47
NL1
C21
R69
C36
3 1
EA-2
C37
R100
C47
R48
R65
C33
EA-9
R66
C39
C40
C38
TP6 H.V. REG
D21
R99
R98
R97
Q15
B C E
R74
EA-10
R75
R67
D27
3 1
EA-13
3 EA-12 1
EA-11


1-617-553-21
EB2
3
1
3
8
5
10
T1
EB
SONY
EB1
1
3


EC SONY
2
1
C902
C901
R901
SG902
SG901
R902
EC2
EC1
1-617-554-21

- ▨ : Conductor side pattern
- ░ : Component side pattern


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
CN1 VIDEO IN (LINE)
CN2 VIDEO OUT
CN3 AUDIO IN (RGB 1)
CN4 AUDIO IN (LINE)
INPUT/OUTPUT TERMINAL BOARD
Q201 2SA844
Q203 2SC403S
Q202 DTC144ES
I VIDEO SW 1,2,3
Q206 2SA844
Q204 2SC403S
Q205 DTC144ES
C VIDEO SW 1,2,3
Q207 DTC144ES LOGIC
Q209 2SC403S VIDEO BUFF
Q208 2SC403S VIDEO AMP
Q210, 211 2SC2785 AUDIO BUFF-1,2
S201 DIGITAL INPUT SELECT
QB (VIDEO SW)
QB-1
QB-2
QB-3
I SW
VIDEO SW
VIDEO
+12V
RGB 1 INPUT
CN2
INTENSITY IN
R IN
H SYNC IN
G IN
V SYNC IN
B IN
CP1
IC2 SN74LS266N BRN DET
IC1 SN74LS09N BLK
IC8 μPC78M05H5.M 5V, REG
IC102 μPC78L12 12V REG
Q8 2SC2026 R BUFF
Q9 2SC2026 G BUFF
Q10 2SC2026 B BUFF
D4, 5, 6 1SS119 I SW-1,2,3
Q12 2SC2785 BLK
IC4 SN74LS136N
IC5 μPC393C
SYNC, PROCESS 1,2
Q13 2SC2785 SYNC BUFF
Q16 2SA1175
Q15 2SC2785 SYNC SW 1-3
Q17 DTC144ES
Q21 2SC2785
D7 RD6.2E-B2 PROTECT
IC7 SN74LS00N LOGIC 2
IC3 SN74LS05N I CONT
Q14 DTC144ES D SYNC SW
Q11 2SC2785 I CONT
IC6 SN74LS00N LOGIC 1
Q20 DTC144ES LOGIC
Q18 DTC144ES D RGB SW
D8 1SS119 A RGB SW
Q19 DTC144ES A RGB SW
S1 NORMAL SUPER
Q1 2SA844 YS BUFF
D1 1SS119 R SW
Q2 2SA1005 R SW-1
Q3 2SC2026 R SW-2
D2 1SS119 G SW
Q4 2SA1005 G SW-1
Q5 2SC2026 G SW-2
D3 1SS119 B SW
Q6 2SA1005 B SW-1
Q7 2SC2026 B SW-2
QA-1
QA-2
QA-3
QA-4
QA-6
QA-9
QA-10
QA-11
TO GB BOARD (GB-6)
TO BB BOARD (BB-10)
TO BB BOARD (BB-5)
TO BB BOARD (BB-9)
TO BA BOARD (BA-2)
TO DB BOARD (DB-26)
+15V
+28V
C BLK
RGB SYNC
V/Ō
21P/Ō
SP/Ō
1BM/3 BIT
HACTH ON/OFF
VIDEO SET
IMPOSE ON/OFF
S SET
RM 12V
CONT ON/OFF
POW
VOL
PIC
BRT
VIDEO SW
I SW
RGB 2 INPUT CONNECTOR
A OUT
A IN
B IN
AV CONT IN
G IN
R IN
BLK
V OUT
V IN
Q108 2SA844
Q109, 110 DTC144ES
EXT VIDEO SW 1-4
Q111 2SC403S
Q112 2SC403S
Q115 2SA844
INT VIDEO SW 2,1
D101 RD3.6EL1 DC SHIFT
Q104, 105 2SC403SPTP VIDEO BUFF
Q106 DTC144ES AV SW
Q107 2SC2785 AV CONT
Q113 DTC144ES
Q114 2SC2785
INT VIDEO SW 4,3
Q101, 102, 103 2SC2785 AUDIO BUFF-1,2,3


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
IC2 SN74LS266N BRN DET
IC1 SN74LS09N BLK
IC8 μPC78M05H5.1V 5V REG
IC102 μPC78L12 12V REG
TO GB BOARD (GB-6)
TO BB BOARD (BB-10)
TO BB BOARD (BB-5)
Q8 2SC2026 R BUFF
Q9 2SC2026 G BUFF
Q10 2SC2026 B BUFF
D4,5,6 1SS119 I SW-1,2,3
Q12 2SC2785 BLK
IC4 SN74LS136N
IC5 μPC393C
SYNC, PROCESS 1, 2
Q13 2SC2785 SYNC BUFF
Q16 2SA1175
Q15 2SC2785 SYNC SW 1-3
Q17 DTC144ES
Q21 2SC2785
IC7 SN74LS00N LOGIC 2
IC3 SN74LS05N I CONT
Q1 2SA844 YS BUFF
D1 1SS119 R SW
Q2 2SA1005 R SW-1
Q3 2SC2026 R SW-2
D2 1SS119 G SW
Q4 2SA1005 G SW-1
Q5 2SC2026 G SW-2
D3 1SS119 B SW
Q6 2SA1005 B SW-1
Q7 2SC2026 B SW-2
Q14 DTC144ES D SYNC SW
Q11 2SC2785 I CONT
Q20 DTC144ES LOGIC
Q18 DTC144ES D RGB SW
D8 1SS119 A RGB SW
Q19 DTC144ES A RGB SW
Q108 2SA844
Q109,110 DTC144ES EXT VIDEO SW 1-4
Q111 2SC403S
Q112 2SC403S
Q115 2SA844 INT VIDEO SW 2,1
Q106 DTC144ES AV SW
Q107 2SC2785 AV CONT
D101 RD3.6EL1 DC SHIFT
Q113 DTC144ES
Q114 2SC2785 INT VIDEO SW 4,3
Q101,102,103 2SC2785 AUDIO BUFF-1,2,3
Q116 DTC144ES VIDEO SW
IC101 HD14053BP AUDIO SELECT
Q118 2SC2785 AUDIO BUFF-5
Q120 2SA1175 AUDIO BUFF-7
Q119 2SC2785 AUDIO BUFF-6
Q117 2SC2785 AUDIO BUFF-4
TO DB BOARD (DB-26)
TO K BOARD (K-2)
TO VPR-722
TO DB BOARD (DB-29)
QA (R.G.B SW, AUDIO SELECT, LOGIC, A/D RGB SW)

QA [RGB SW, AUDIO SW, LOGIC, INPUT SELECT]

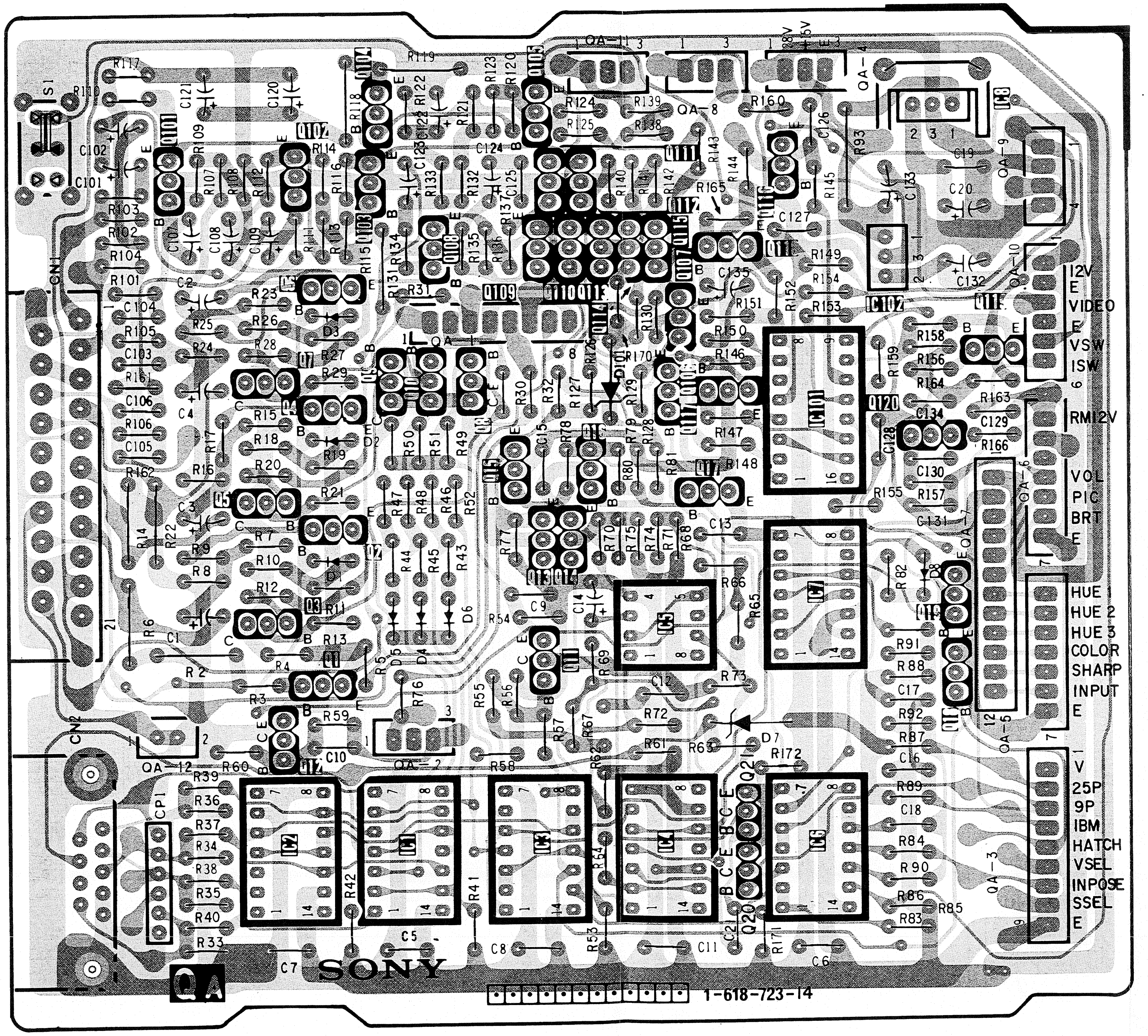
QB [VIDEO SW]

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

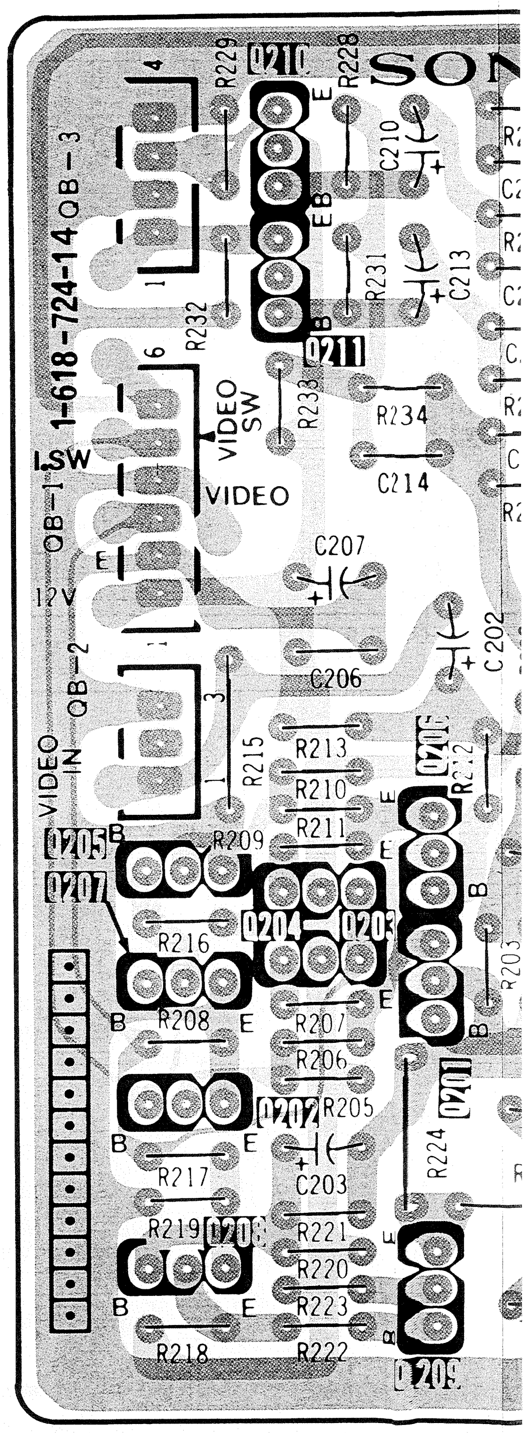
– QA Board –

IC Q	D
104 105	
IC8	
101,102 111	
116	
103 112	
108 115 118	
107	
6,109,110,113,114	
IC102,119	3
	101
7, 9, 10 106	
IC101,120	
4 117	
8 16	2
15, 17	
5	
2	
13, 14	1 8
IC7 19	
3	6
IC5	
1, 11	5, 4
18	7
12	
21	
IC2, 1, 3, 4, 6	
20	

A B C D E F G H I J

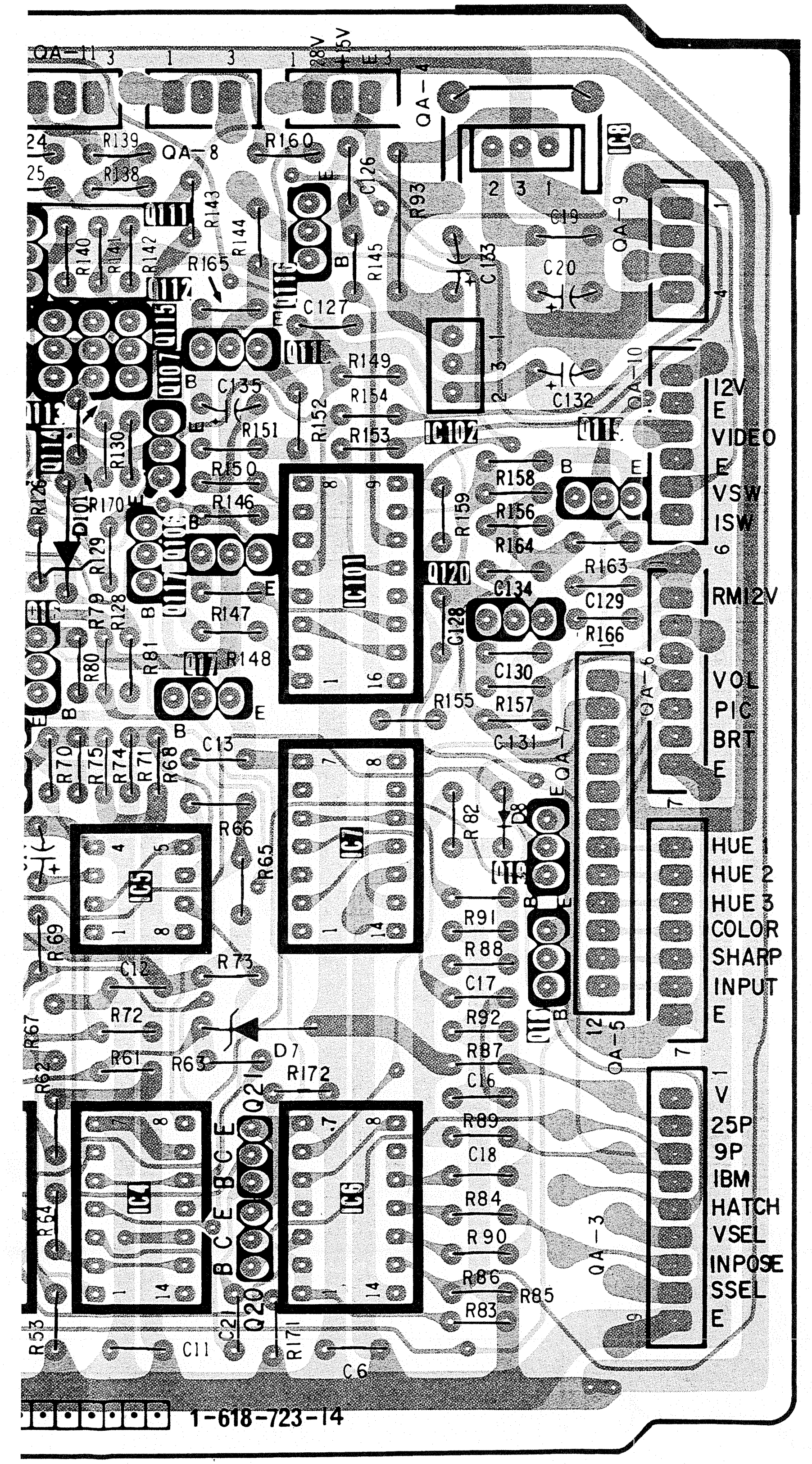

QA
SONY
1-618-723-14
CN1
CN2
CP1
S1
QA-1
QA-2
QA-3
QA-4
QA-5
QA-6
QA-7
QA-8
QA-9
QA-10
QA-11
QA-12
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC101
IC102
12V
E
VIDEO
E
VSW
ISW
RM12V
VOL
PIC
BRT
E
HUE 1
HUE 2
HUE 3
COLOR
SHARP
INPUT
E
V
25P
9P
IBM
HATCH
VSEL
INPOSE
SSEL
E

– QB Board –

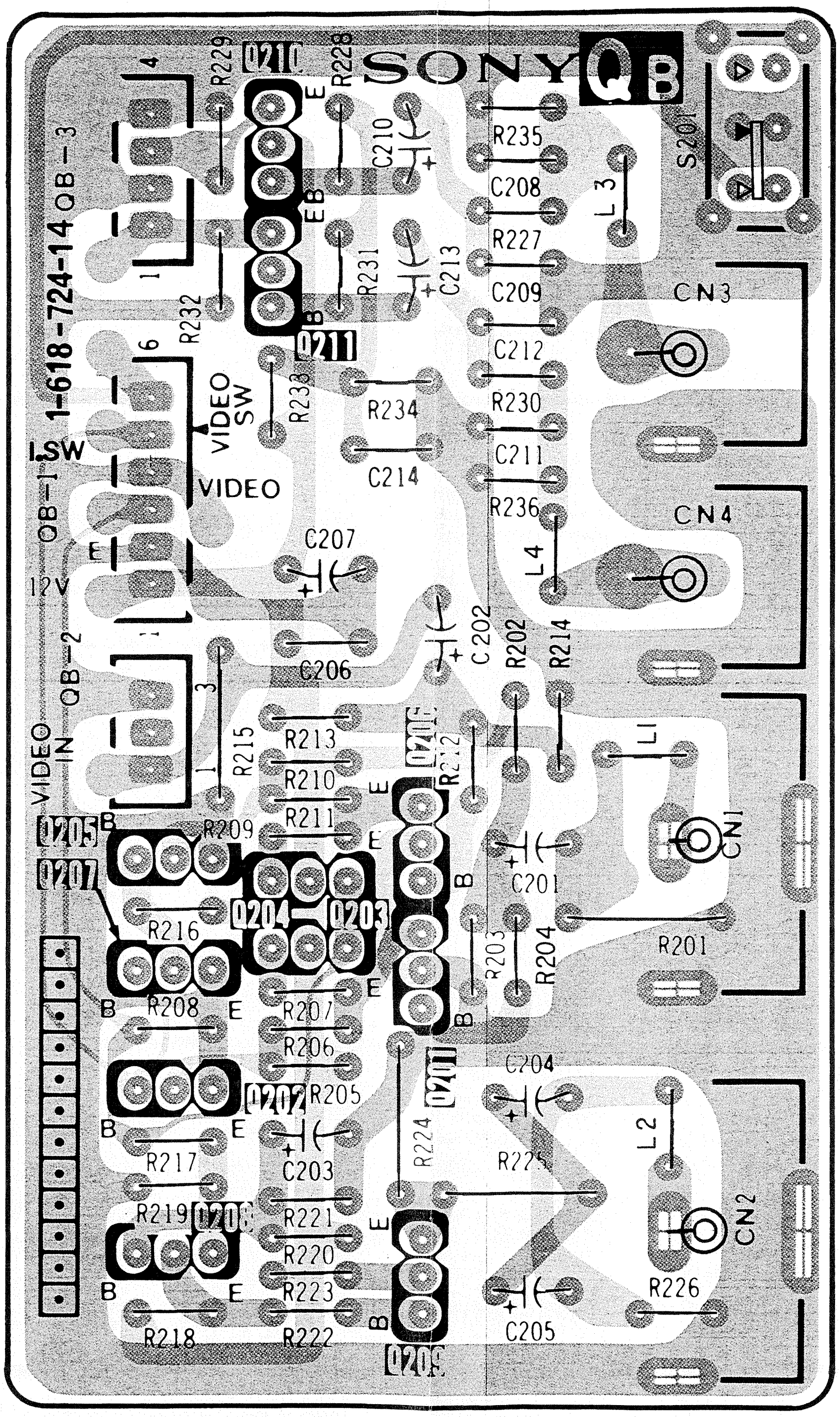

SON
1-618-724-14
QB-1
QB-2
QB-3
VIDEO SW
VIDEO
ISW
12V
VIDEO IN
Q201
Q202
Q203
Q204
Q205
Q207
Q208
Q209
Q210
Q211

QB [VIDEO SW]

8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23

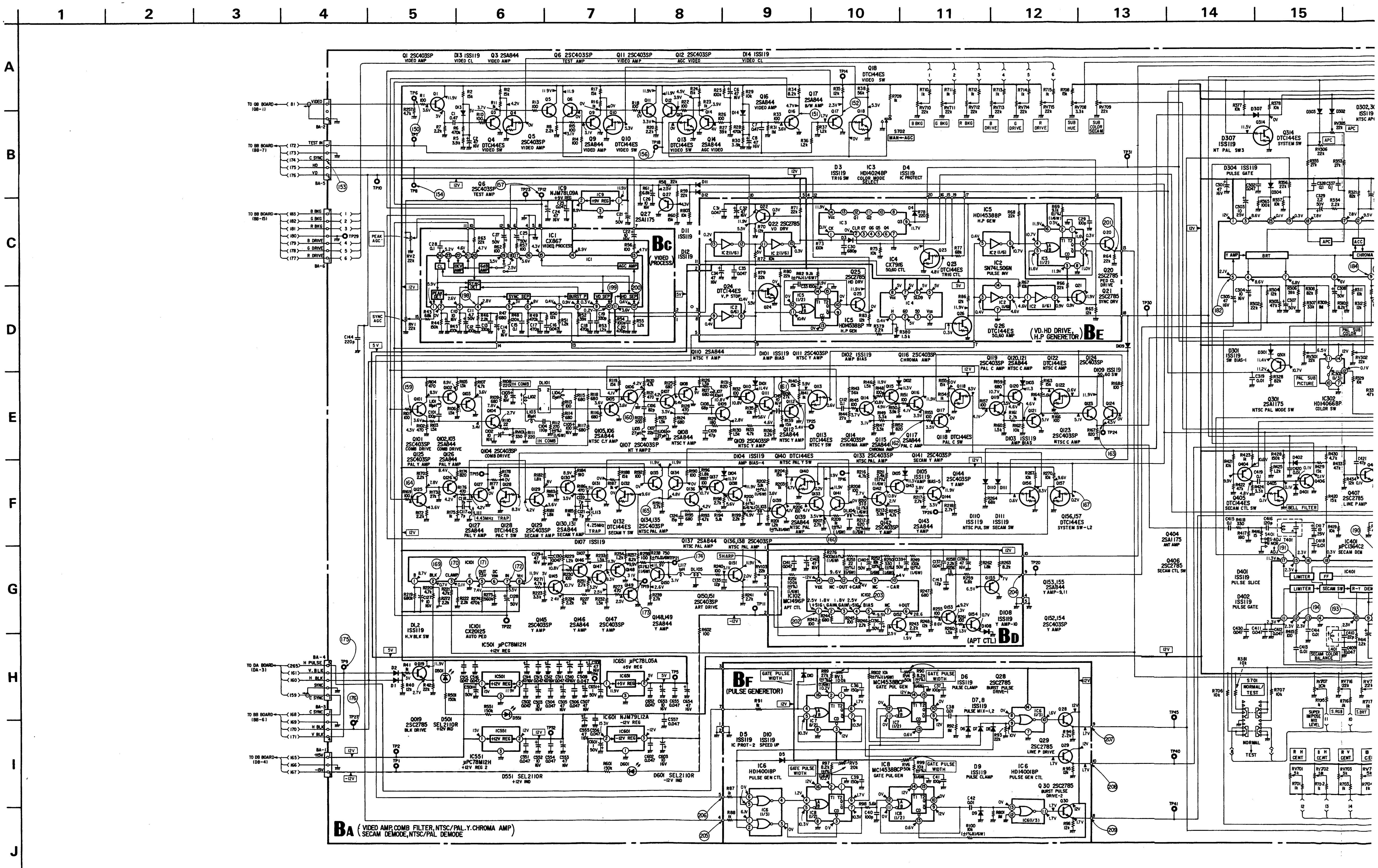

QA-11
QA-8
QA-4
QA-9
QA-10
QA-6
QA-7
QA-5
QA-3
28V
15V
IC101
IC102
IC7
IC5
IC6
IC1
Q120
Q107
Q115
Q117
Q118
Q101
D7
12V
E
VIDEO
E
VSW
ISW
6
RMI2V
VOL
PIC
BRT
E
HUE 1
HUE 2
HUE 3
COLOR
SHARP
INPUT
E
V
25P
9P
IBM
HATCH
VSEL
INPOSE
SSEL
E
1-618-723-14

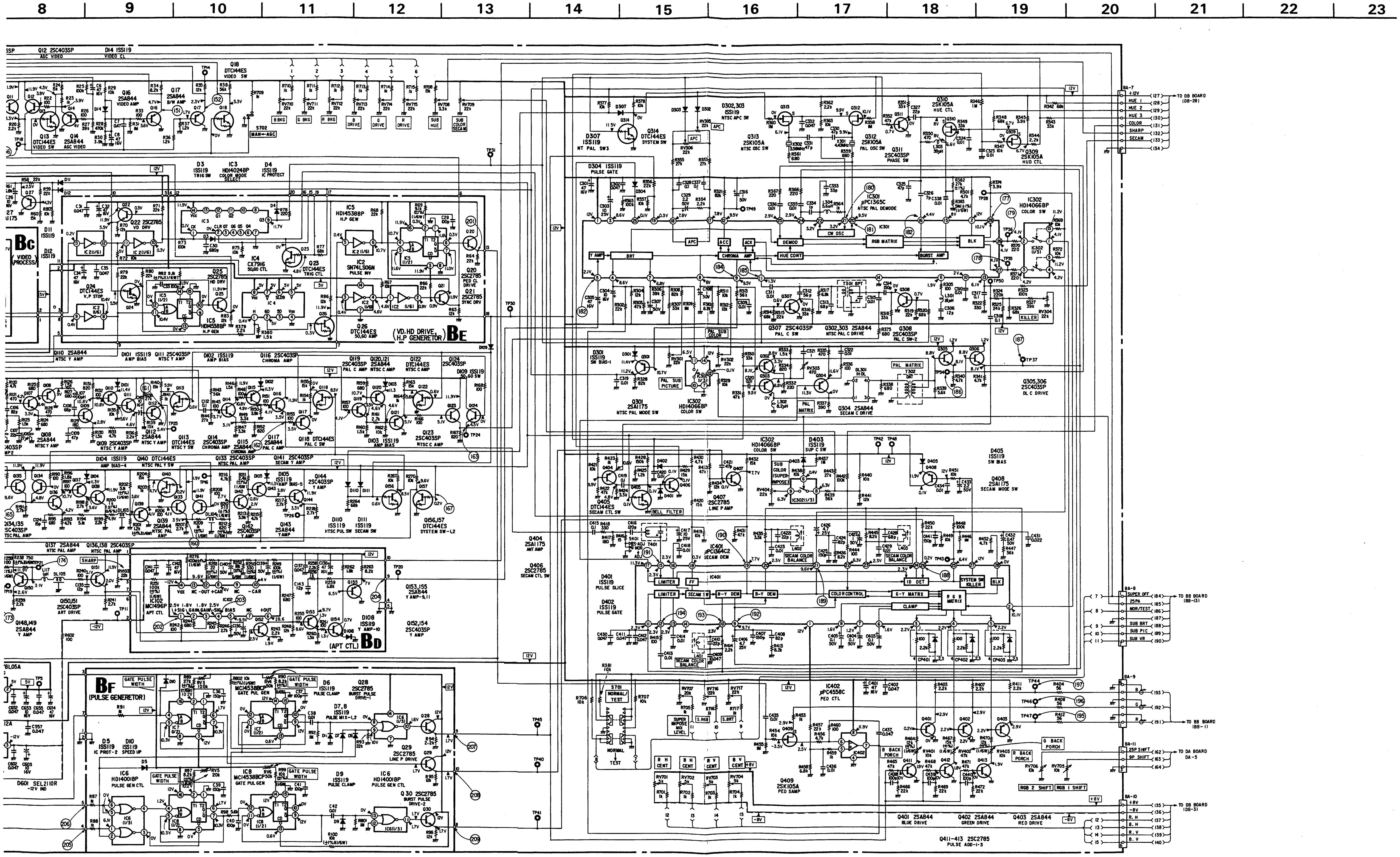
– QB Board –


SONY
QB
1-618-724-14
QB-3
QB-1
QB-2
ISW
12V
VIDEO SW
VIDEO
VIDEO IN
S201
CN1
CN2
CN3
CN4
L1
L2
L3
L4
Q201
Q202
Q203
Q204
Q205
Q206
Q207
Q208
Q209
Q210
Q211
R201
R202
R203
R204
R205
R206
R207
R208
R209
R210
R211
R212
R213
R214
R215
R216
R217
R218
R219
R220
R221
R222
R223
R224
R225
R226
R227
R228
R229
R230
R231
R232
R233
R234
R235
R236
C201
C202
C203
C204
C205
C206
C207
C208
C209
C210
C211
C212
C213
C214

● ▨ : Conductor side pattern

● ▨ : Component side pattern


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
TO QB BOARD (QB-1)
TO BB BOARD (BB-7)
TO BB BOARD (BB-15)
TO DA BOARD (DA-3)
TO BB BOARD (BB-6)
TO DB BOARD (DB-4)
VIDEO
TEST IN
C SYNC
HD
VD
B BKG
G BKG
R BKG
B DRIVE
G DRIVE
R DRIVE
H PULSE
V BLK
H BLK
SYNC
+15V
-15V
Q1 2SC403SP VIDEO AMP
D13 1SS119 VIDEO CL
Q3 2SA844 VIDEO AMP
Q6 2SC403SP TEST AMP
Q11 2SC403SP VIDEO AMP
Q12 2SC403SP AGC VIDEO
D14 1SS119 VIDEO CL
Q18 DTC144ES VIDEO SW
S702 MAN↔AGC
IC9 NJM78L09A +9V REG
IC1 CX867 VIDEO PROCESS
Bc (VIDEO PROCESS)
IC3 HD14024BP COLOR MODE SELECT
IC4 CX7916 50,60 CTL
IC5 HD14538BP H.P GEN
IC2 SN74LS06N PULSE INV
BE (VD,HD DRIVE, H.P GENERETOR)
Q20 2SC2785 PED CL DRIVE
Q21 2SC2785 SYNC DRV
Q26 DTC144ES 50,60 AMP
IC101 CX20125 AUTO PED
IC102 MC1496P APT CTL
BD (APT CTL)
IC501 µPC78M12H +12V REG
IC651 µPC78L05A +5V REG
IC551 µPC78M12H +12V REG 2
IC601 NJM79L12A -12V REG
D551 SEL2110R +12V IND
D601 SEL2110R -12V IND
BF (PULSE GENERETOR)
IC6 HD14001BP PULSE GEN CTL
IC7 MC14538BCP GATE PUL GEN
IC8 MC14538BCP GATE PUL GEN
Q28 2SC2785 BURST PULSE DRIVE-1
Q29 2SC2785 LINE P DRIVE
Q30 2SC2785 BURST PULSE DRIVE-2
GATE PULSE WIDTH
IC401 µPC1364C2 SECAM DEM
IC302 HD14066BP COLOR SW
Q301 2SA1175 NTSC PAL MODE SW
S701 NORMAL TEST
BRT
CHROMA
APC
ACC
PAL SUB COLOR
LIMITER
SECAM SW
BELL FILTER
SECAM COLOR BALANCE
SUPER IMPOSE MIX LEVEL
BA (VIDEO AMP, COMB FILTER, NTSC/PAL.Y.CHROMA AMP) SECAM DEMODE, NTSC/PAL DEMODE


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
Bc VIDEO PROCESS
(VD.HD DRIVE, H.P GENERETOR) BE
(APT CTL) BD
BF (PULSE GENERETOR)
IC3 HD14024BP
IC4 CX7916
IC5 HD14538BP
IC2 SN74LS06N
IC301 μPC1365C
IC302 HD14066BP
IC401 μPC1364C2
IC402 μPC4558C
IC102 MC1496P
IC6 HD14001BP
IC7 MC14538BCP
IC8 MC14538BCP
D601 SEL2110R
BA-7
BA-8
BA-9
BA-10
BA-11
TO DB BOARD (DB-2B)
TO BB BOARD (BB-13)
TO BB BOARD (BB-11)
TO DA BOARD DA-5
TO DB BOARD (DB-3)
HUE 1
HUE 2
HUE 3
COLOR
SHARP
SECAM
SUPER OFF
25PA
NOR/TEST
SUB BRT
SUB PIC
SUB VR
25P SHIFT
9P SHIFT
R.H
B.H
R.V
B.V
BELL FILTER
COLOR CONTROL
G-Y MATRX
R G B MATRIX
CLAMP
ID DET
SYSTEM SW KILLER
DEMOD
RGB MATRIX
BURST AMP
CHROMA AMP
HUE CONT
CW OSC
PAL MATRIX
RGB 2 SHIFT
RGB 1 SHIFT
Q401 2SA844 BLUE DRIVE
Q402 2SA844 GREEN DRIVE
Q403 2SA844 RED DRIVE
Q411-413 2SC2785 PULSE ADD-1-3

BA [VIDEO AMP, COMB FILTER, NTSC/PAL Y.CHROMA AMP, SECAM DEMOD, NTSC/PAL DEMOD]

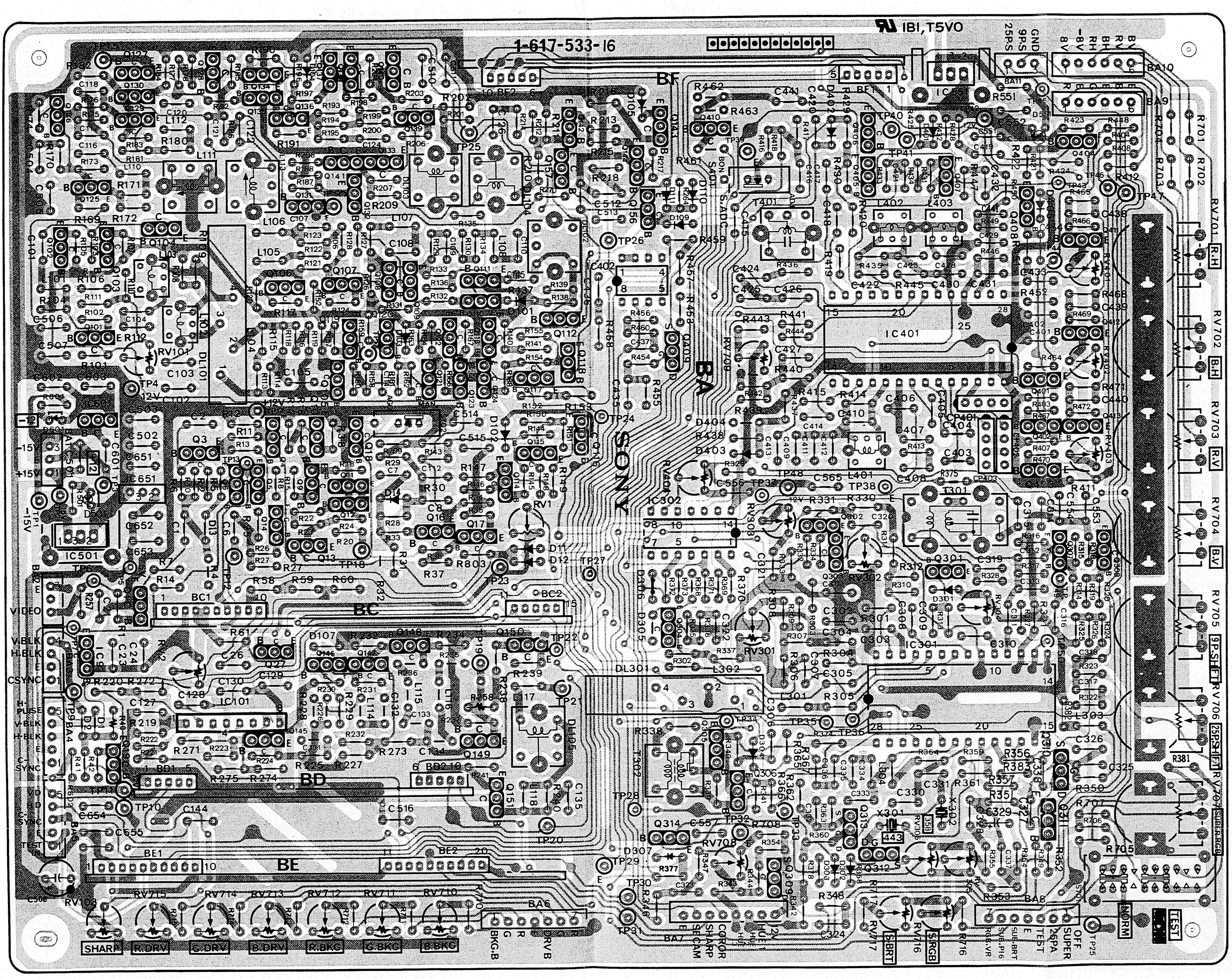
BC [VIDEO PROCESS]

BD [APT CTL

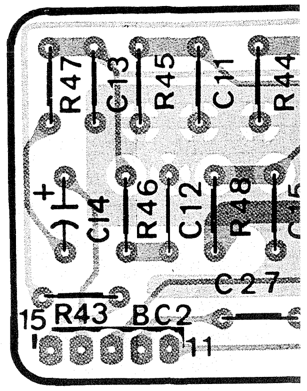
1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

— BA Board —

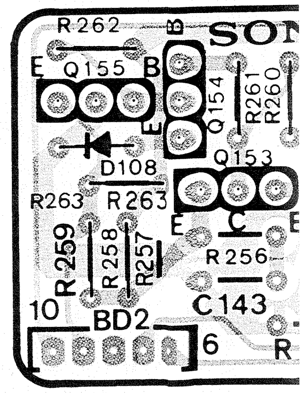
	Q, IC	D	ADJ	TP
A	137 127, 140	104		15
B	138, 136 128, 134, IC551 126 130, 135, 139 410 129 142, 143 406 404 141, 133 157, 144	105 551 401 402		45 42 25, 40 41 39
C	125, 156, 405 132, 407 131, 408 104, 411 102, 103 109 108, 111, IC402	109 111, 405 110	RV701 RV401	43 46 47 26 44
D	107 106, 110 112 119, 120 412 101 IC401 401, 409 122, 113, 118 105, 123, 117 121, 124	101 103	RV702 RV101 RV402 RV709	17 4
E	IC601 10, 402, 413 4, 18, 116 3 115 403 5 6, 9, 11, 114 IC651	601 102 403	RV703 RV403 RV404	14, 24 3, 48, 38 2, 37
F	12 14 302 IC302, 16, 17 13 IC501, 303 307, 308 301	501 14 13 11 12 301	RV1, RV303 RV704 RV302	1 18 12 5, 23 6, 27 49
G	1 304 IC9, 27 148, 150 146, 147 IC301	107	RV304 RV705 RV301 RV2 RV706	7 50 22 19 9, 21
H	IC101 145, 149 305 19 306 310 151	1, 2 304	RV707	35, 36 34 11 10
I	311 313 314 312 309	307 303, 302	RV306 RV708 RV305 RV717 RV103, RV716 RV715	28, 33 20 32 29 30
J			RV714 RV713 RV712 RV711 RV710	31 25
	Q, IC	D	ADJ	TP

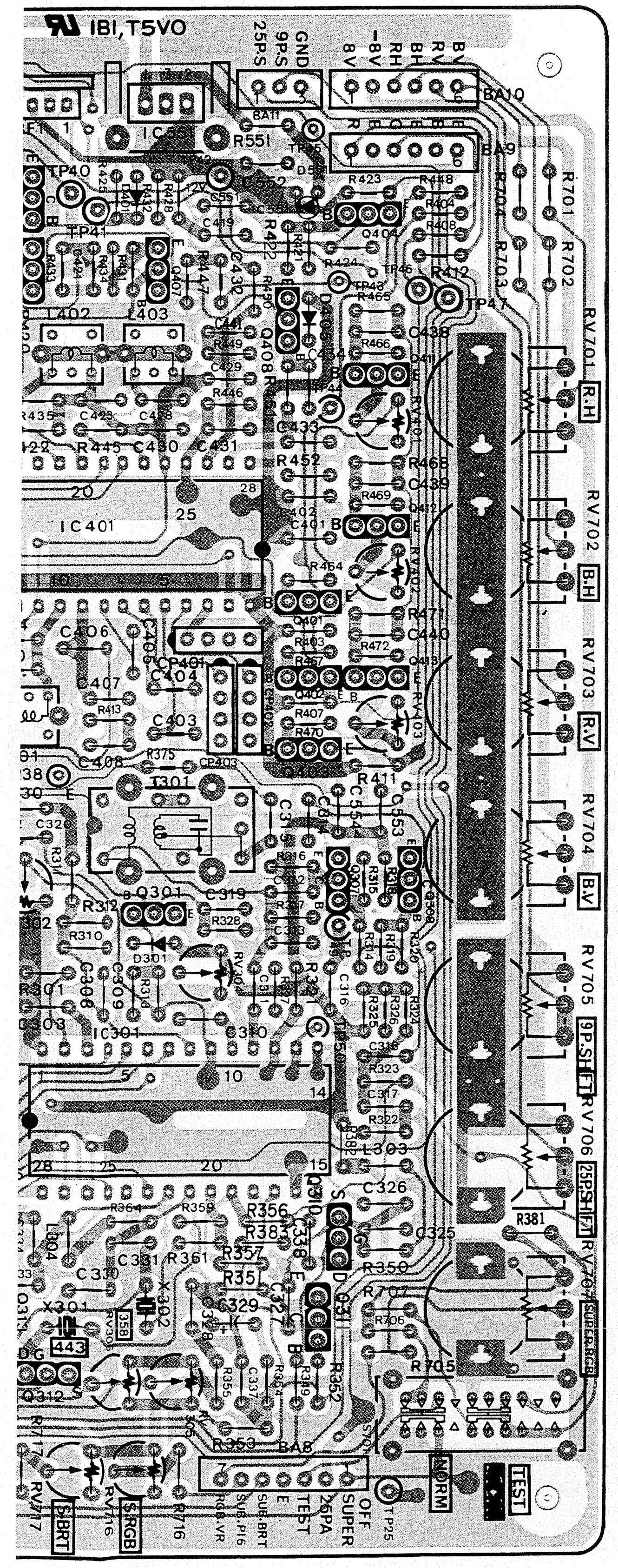

1-617-533-16
IBI,T5VO
BA
BC
BD
BE
BF
SONY
BC1
BC2
BD1
BD2
BE1
BE2
BF1
BF2
BA6
BA7
BA8
BA9
BA10
IC401
IC301
IC302
IC501
IC101
DL101
DL301
VIDEO
V.BLK
H.BLK
CSYNC
+15V
-15V
12V
SHARP
R.DRV
G.DRV
B.DRV
R.BKG
G.BKG
B.BKG
R.H
B.H
R.V
B.V
SP.SHIFT
25PS
SUB.BRT
SUB.RGB
NORM
TEST
RV701
RV702
RV703
RV704
RV705
RV706
RV707
RV708
RV709
RV710
RV711
RV712
RV713
RV714
RV715
RV716
RV717

— BC Board —

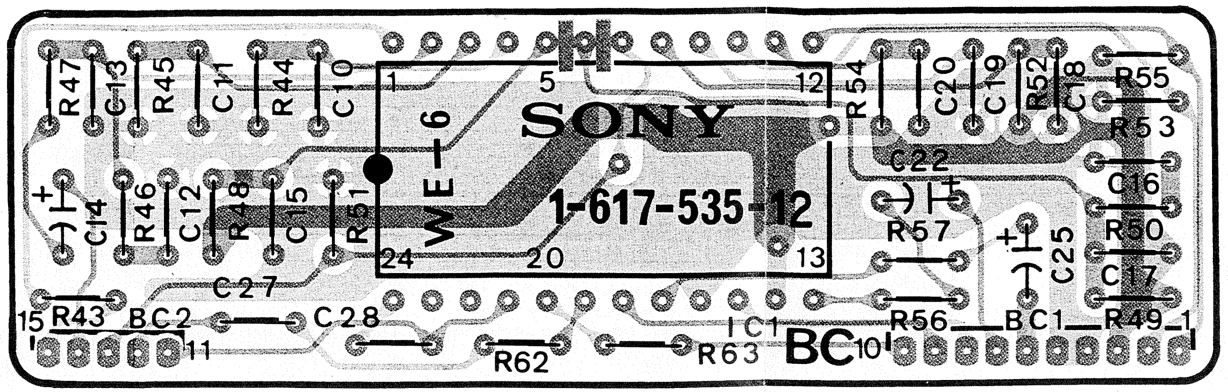

R47
C13
R45
C11
R44
C14
R46
C12
R48
C27
R43
BC2
15
11

— BD Board —

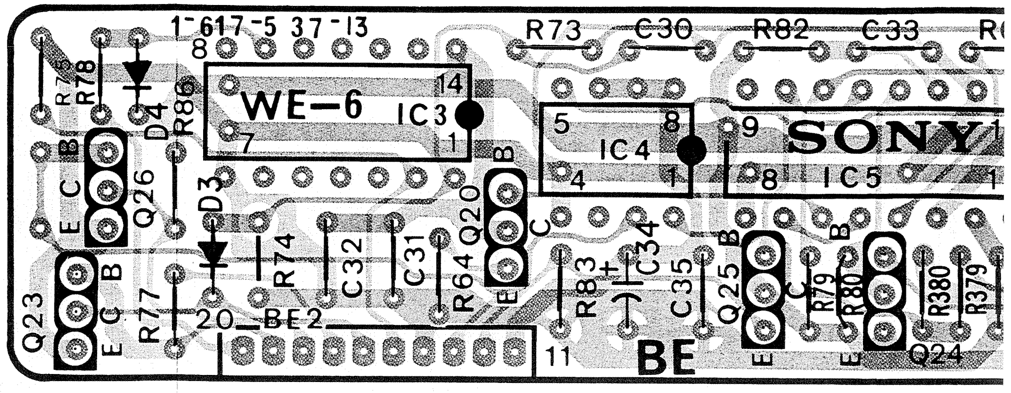

R262
SONY
Q155
Q154
R261
R260
D108
Q153
R263
R263
R259
R258
R257
R256
C143
BD2
10
6


IBI,T5VO
IC401
IC301
RV701
RV702
RV703
RV704
RV705
RV706
R.H
B.H
R.V
B.V
9P.SHIFT
25P.SHIFT
SUPER.RGB
NORM
TEST
SBRT
SRGB
BA8
BA9
BA10
BA11

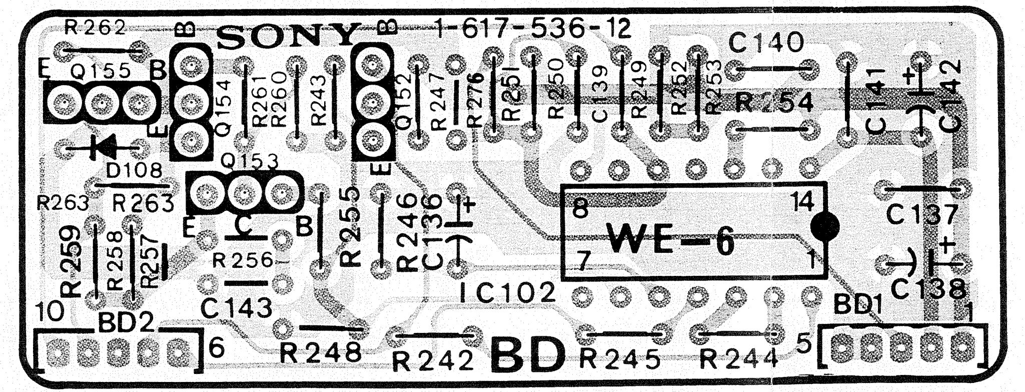
– BC Board –


SONY
WE-6
1-617-535-12
IC1
BC1
BC2
BC

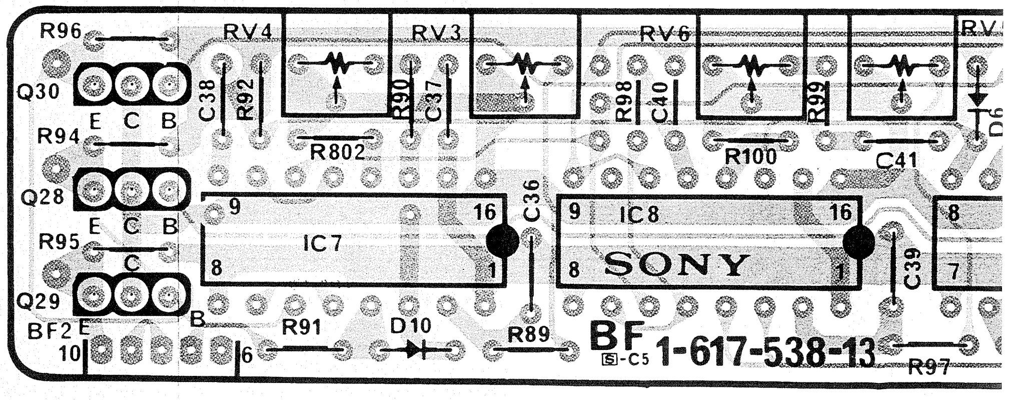
– BE Board –


1-617-5 37-13
WE-6
IC3
IC4
IC5
SONY
BE2
BE

– BD Board –


SONY
1-617-536-12
WE-6
IC102
BD1
BD2
BD

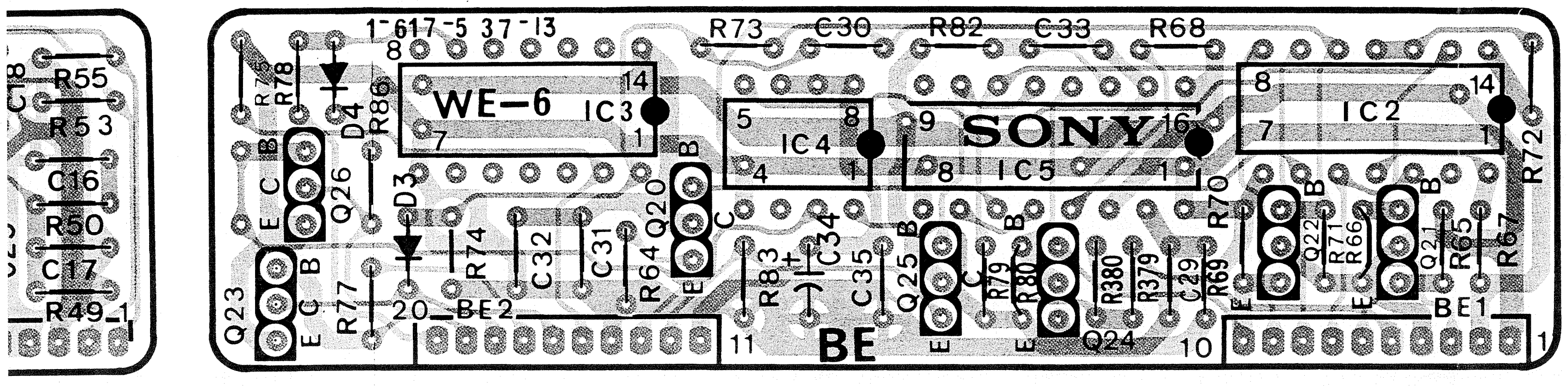
– BF Board –


RV4
RV3
RV6
IC7
IC8
SONY
BF2
BF
1-617-538-13

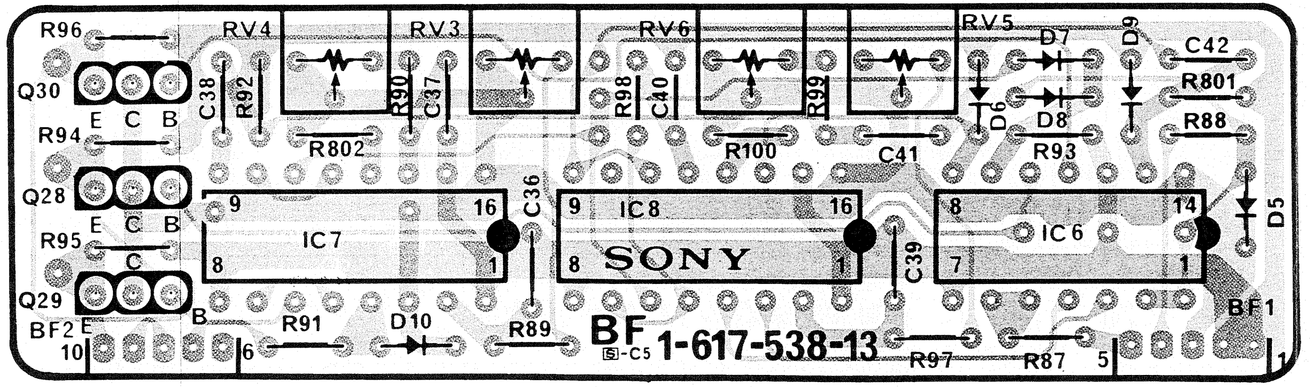
BF [PULSE GENERATOR]

21	22	23	24	25	26	27	28	29

– BE Board –


1-617-537-13
WE-6
IC3
IC4
SONY
IC5
IC2
R73
C30
R82
C33
R68
R55
R53
C16
R50
C17
R49
C18
R76
R78
D4
R86
D3
Q26
Q23
R77
R74
C32
C31
R64
Q20
R83
C34
C35
Q25
R79
R80
Q24
R380
R379
C29
R69
R70
Q22
R71
R66
Q21
R65
R67
R72
BE2
BE1
BE
20
11
10
1

– BF Board –


R96
Q30
R94
Q28
R95
Q29
BF2
10
6
RV4
RV3
RV6
RV5
C38
R92
R90
C37
R802
R98
C40
R100
R99
C41
D7
D9
D6
D8
R93
C42
R801
R88
IC7
IC8
SONY
IC6
C36
C39
D5
R91
D10
R89
BF 1-617-538-13
R97
R87
5
BF1
1

● ▨ : Conductor side pattern

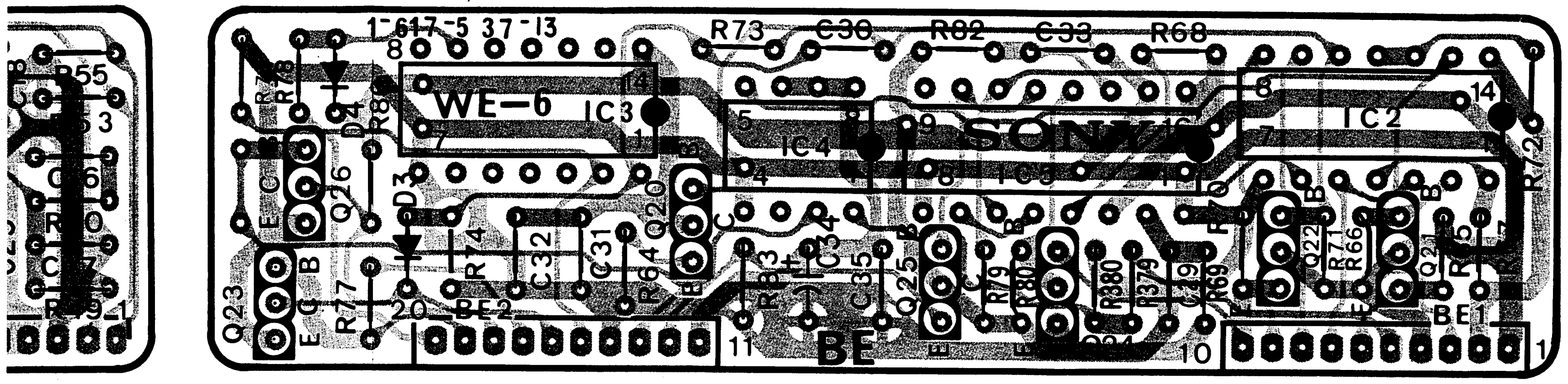
● ▨ : Component side pattern

Seite 101 leer

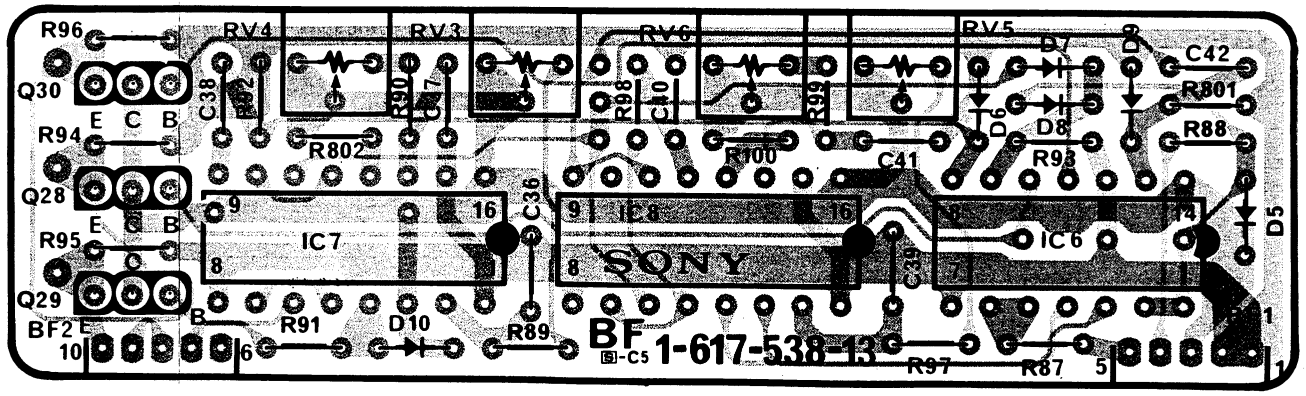
BF [PULSE GENERATOR]

21	22	23	24	25	26	27	28	29

– BE Board –


1-617-537-13
R55
R73
C30
R82
C33
R68
WE-6
IC3
IC4
IC5
IC2
SONY
D4
D3
Q26
Q20
Q23
R77
R74
C32
C31
R64
R83
C34
C35
Q25
R79
R80
R380
R379
C39
R69
Q24
Q22
R71
R66
Q21
R72
BE2
BE1
BE
E
C
B
20
11
10
1
8
14
7

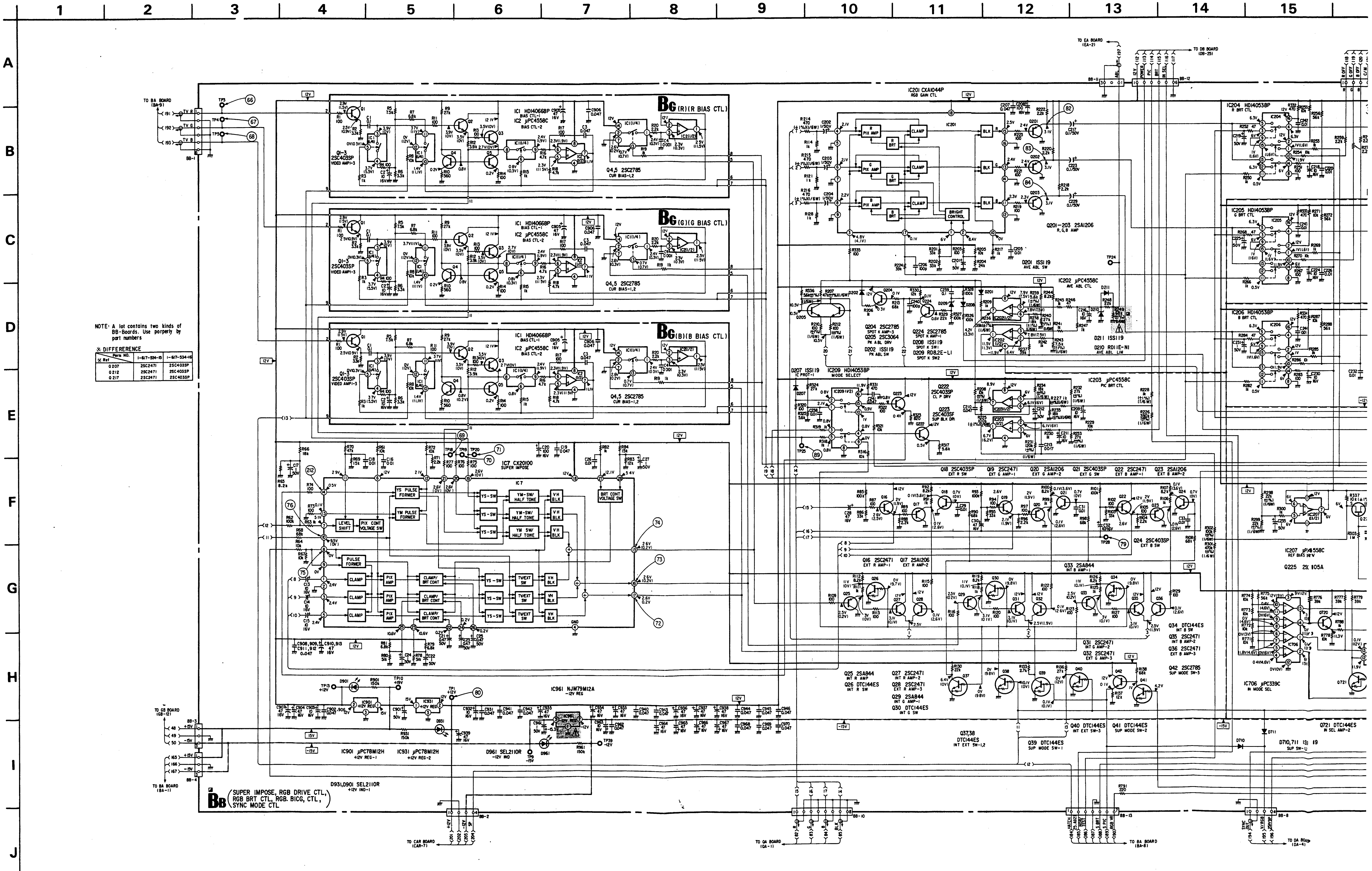
– BF Board –


R96
RV4
RV3
RV6
RV5
D7
D9
C42
Q30
C38
R92
R90
C37
R98
C40
R99
D6
D8
R801
R88
R94
E C B
R802
R100
C41
R93
Q28
IC7
C36
IC8
SONY
IC6
D5
R95
C43
Q29
BF2
R91
D10
R89
BF
1-617-538-13
R97
R87
10
6
5
1
9
8
16
14

● ▇ : Conductor side pattern

● ▨ : Component side pattern

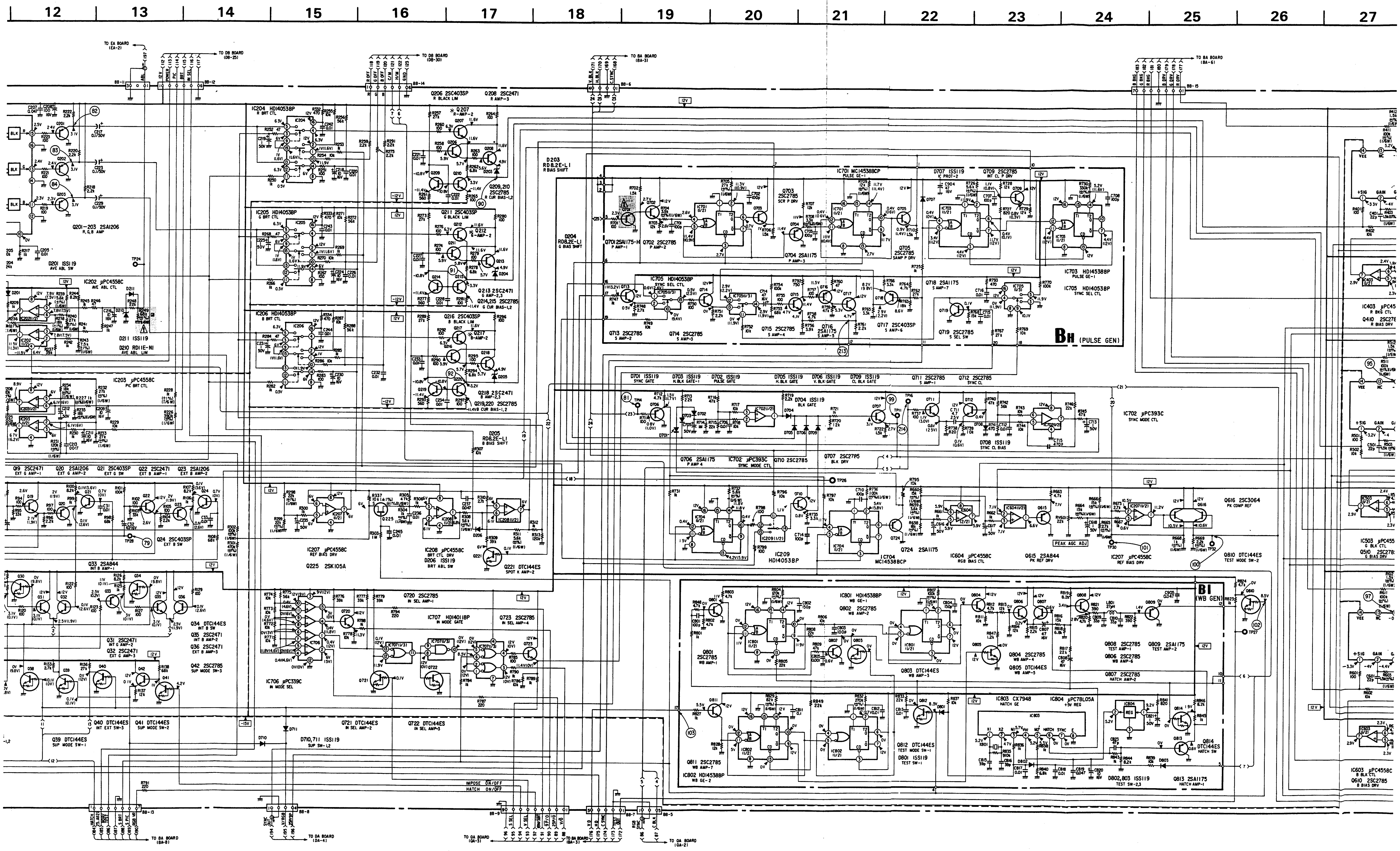
Seite 101 leer

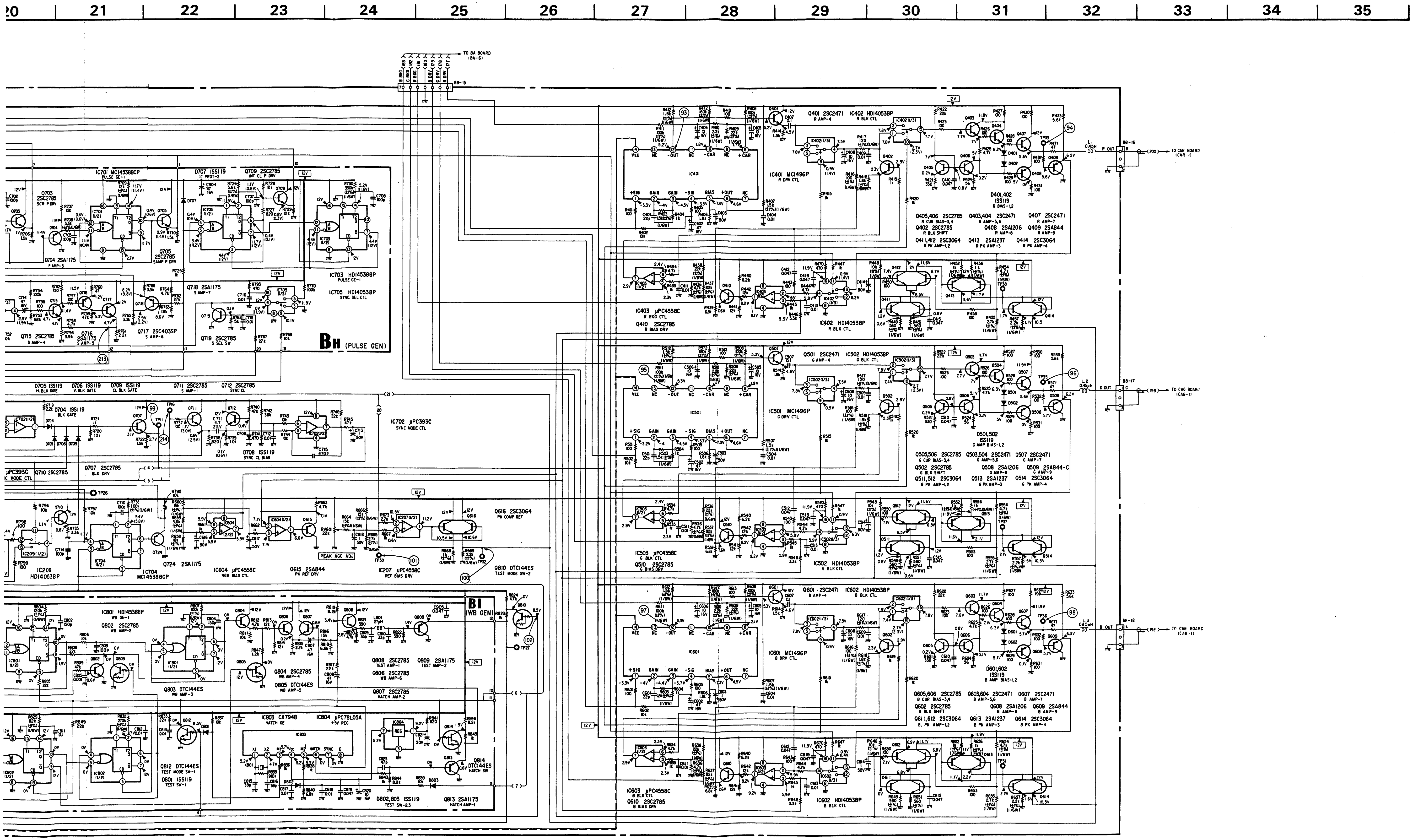

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
Bb (SUPER IMPOSE, RGB DRIVE CTL, RGB BRT CTL, RGB. BICG, CTL, SYNC MODE CTL)
Bc (R)(R BIAS CTL)
Bc (G)(G BIAS CTL)
Bc (B)(B BIAS CTL)
IC1 HD14066BP BIAS CTL-1
IC2 µPC4558C BIAS CTL-2
Q1-3 2SC403SP VIDEO AMP1-3
Q4,5 2SC2785 CUR BIAS-1,2
IC7 CX20100 SUPER IMPOSE
YS PULSE FORMER
YM PULSE FORMER
LEVEL SHIFT
PIX CONT VOLTAGE SW
YS-SW
YM-SW/HALF TONE
VH BLK
BRT CONT VOLTAGE SW
PULSE FORMER
CLAMP
PIX AMP
CLAMP/BRT CONT
TV/EXT SW
IC201 CXA1044P RGB GAIN CTL
R PIX AMP
G PIX AMP
B PIX AMP
R BRT
G BRT
B BRT
BLK
BRIGHT CONTROL
Q201-203 2SA1206 R,G,B AMP
D201 1SS119 AVE ABL SW
IC202 µPC4558C AVE ABL CTL
D211 1SS119
D210 RD11E-N1 AVE ABL LIM
Q204 2SC2785 SPOT K AMP-1
Q205 2SC3064 PK ABL DRV
D202 1SS119 PK ABL SW
Q224 2SC2785 SPOT K AMP-1
D208 1SS119 SPOT K SW1
D209 RD8.2E-L1 SPOT K SW2
D207 1SS119 IC PROT-1
IC209 HD14053BP MODE SELECT
Q222 2SC403SP CL P DRV
Q223 2SC403SP SUP BLK DR
IC203 µPC4558C PIC BRT CTL
IC204 HD14053BP R BRT CTL
IC205 HD14053BP G BRT CTL
IC206 HD14053BP B BRT CTL
IC207 µPC4558C REF BIAS 12V
Q225 2SC1005A
Q18 2SC403SP EXT R SW
Q19 2SC2471 EXT G AMP-1
Q20 2SA1206 EXT G AMP-2
Q21 2SC403SP EXT G SW
Q22 2SC2471 EXT B AMP-1
Q23 2SA1206 EXT B AMP-2
Q16 2SC2471 EXT R AMP-1
Q17 2SA1206 EXT R AMP-2
Q24 2SC403SP EXT B SW
Q33 2SA844 INT B AMP-1
Q25 2SA844 INT R AMP
Q26 DTC144ES INT R SW
Q27 2SC2471 INT R AMP-2
Q28 2SC2471 EXT R AMP-3
Q29 2SA844 INT G AMP-1
Q30 DTC144ES INT G SW
Q31 2SC2471 INT G AMP-2
Q32 2SC2471 EXT G AMP-3
Q34 DTC144ES INT B SW
Q35 2SC2471 INT B AMP-2
Q36 2SC2471 EXT B AMP-3
Q42 2SC2785 SUP MODE SW-3
Q37,38 DTC144ES INT EXT SW-1,2
Q39 DTC144ES SUP MODE SW-1
Q40 DTC144ES INT EXT SW-3
Q41 DTC144ES SUP MODE SW-2
IC706 µPC339C IN MODE SEL
Q721 DTC144ES IN SEL AMP-2
D710,711 1SS119 SUP SW-1
IC961 NJM79M12A -12V REG
IC901 µPC78M12H +12V REG-1
IC931 µPC78M12H +12V REG-2
D961 SEL2110R -12V IND
D931,D901 SEL2110R +12V IND-1
TO BA BOARD (BA-9)
TO GB BOARD (GB-12)
TO BA BOARD (BA-1)
TO CAR BOARD (CAR-7)
TO QA BOARD (QA-1)
TO BA BOARD (BA-8)
TO QA BOARD (QA-4)
TO EA BOARD (EA-21)
TO DB BOARD (DB-25)
TV R
TV G
TV B
BB-1
BB-2
BB-3
BB-4
BB-8
BB-10
BB-11
BB-12
BB-13

NOTE: A lot contains two kinds of BB-Boards. Use porperly by part numbers

※ DIFFERERENCE

※ Ref \ Parts NO.	1-617-534-15	1-617-534-16
Q207	2SC2471	2SC403SP
Q212	2SC2471	2SC403SP
Q217	2SC2471	2SC403SP


12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
TO EA BOARD (EA-2)
TO DB BOARD (DB-25)
TO DB BOARD (DB-30)
TO BA BOARD (BA-3)
TO BA BOARD (BA-6)
BB-11
BB-12
BB-14
BB-6
BB-15
BB-13
BB-8
BB-9
BB-7
BB-5
Q201-203 2SA1206 R,G,B AMP
D201 1SS119 AVE ABL SW
IC202 μPC4558C AVE ABL CTL
D211 1SS119
D210 RD11E-N1 AVE ABL LIM
IC203 μPC4558C PIC BRT CTL
IC204 HD14053BP R BRT CTL
IC205 HD14053BP G BRT CTL
IC206 HD14053BP B BRT CTL
Q206 2SC403SP R BLACK LIM
Q208 2SC2471 R AMP-3
Q207 R AMP-2
Q209,210 2SC2785 R CUR BIAS-1,2
Q211 2SC403SP G BLACK LIM
Q212 G AMP-2
Q213 2SC2471 G AMP-2,3
Q214,215 2SC2785 G CUR BIAS-1,2
Q216 2SC403SP B BLACK LIM
Q217 B AMP-2
Q218 2SC2471 B AMP-3
Q219,220 2SC2785 B CUR BIAS-1,2
D203 RD8.2E-L1 R BIAS SHIFT
D204 RD8.2E-L1 G BIAS SHIFT
D205 RD8.2E-L1 B BIAS SHIFT
Q19 2SC2471 EXT G AMP-1
Q20 2SA1206 EXT G AMP-2
Q21 2SC403SP EXT G AMP-1
Q22 2SC2471 EXT B AMP-1
Q23 2SA1206 EXT B AMP-2
Q24 2SC403SP EXT B SW
Q33 2SA844 INT B AMP-1
Q34 DTC144ES INT B SW
Q35 2SC2471 INT B AMP-2
Q36 2SC2471 INT B AMP-3
Q31 2SC2471 INT G AMP-2
Q32 2SC2471 EXT G AMP-3
Q42 2SC2785 SUP MODE SW-3
Q40 DTC144ES INT EXT SW-3
Q41 DTC144ES SUP MODE SW-2
Q39 DTC144ES SUP MODE SW-1
IC207 μPC4558C REF BIAS DRV
Q225 2SK105A
IC208 μPC4558C BRT CTL DRV
D206 1SS119 BRT ABL SW
Q221 DTC144ES SPOT K AMP-2
IC706 μPC339C IN MODE SEL
Q720 2SC2785 IN SEL AMP-1
IC707 HD14011BP IN MODE GATE
Q723 2SC2785 IN SEL AMP-4
Q721 DTC144ES IN SEL AMP-2
Q722 DTC144ES IN SEL AMP-3
D710,711 1SS119 SUP SW-L2
IMPOSE ON/OFF
HATCH ON/OFF
IC701 MC14538BCP PULSE GE-1
D707 1SS119 IC PROT-2
Q709 2SC2785 INT CL P DRV
Q701 2SA1175-H P AMP-1
Q702 2SC2785 P AMP-2
Q703 2SC2785 SCR P DRV
Q704 2SA1175 P AMP-3
Q705 2SC2785 SAMP P DRV
IC703 HD14538BP PULSE GE-1
IC705 HD14053BP SYNC SEL CTL
Q713 2SC2785 S AMP-2
Q714 2SC2785 S AMP-3
Q715 2SC2785 S AMP-4
Q716 2SA1175 S AMP-5
Q717 2SC403SP S AMP-6
Q718 2SA1175 S AMP-7
Q719 2SC2785 S SEL SW
BH (PULSE GEN)
D701 1SS119 SYNC GATE
D703 1SS119 H BLK GATE-1
D702 1SS119 PULSE GATE
D705 1SS119 H BLK GATE
D706 1SS119 V BLK GATE
D709 1SS119 CL BLK GATE
Q711 2SC2785 S AMP-1
Q712 2SC2785 SYNC CL
D704 1SS119 BLK GATE
D708 1SS119 SYNC CL BIAS
IC702 μPC393C SYNC MODE CTL
Q706 2SA1175 P AMP 4
Q710 2SC2785
Q707 2SC2785 BLK DRV
TP26
IC209 HD14053BP
IC704 MC14538BCP
Q724 2SA1175
IC604 μPC4558C RGB BIAS CTL
Q615 2SA844 PK REF DRV
PEAK AGC ADJ
IC207 μPC4558C REF BIAS DRV
Q616 2SC3064 PK COMP REF
Q810 DTC144ES TEST MODE SW-2
BI (WB GEN)
IC801 HD14538BP WB GE-1
Q802 2SC2785 WB AMP-2
Q801 2SC2785 WB AMP-1
Q803 DTC144ES WB AMP-3
Q804 2SC2785 WB AMP-4
Q805 DTC144ES WB AMP-5
Q808 2SC2785 TEST AMP-1
Q809 2SA1175 TEST AMP-2
Q806 2SC2785 WB AMP-6
Q807 2SC2785 HATCH AMP-2
Q811 2SC2785 WB AMP-7
IC802 HD14538BP WB GE-2
Q812 DTC144ES TEST MODE SW-1
D801 1SS119 TEST SW-1
IC803 CX7948 HATCH GE
IC804 μPC78L05A +5V REG
D802,803 1SS119 TEST SW-3
Q813 2SA1175 HATCH AMP-1
Q814 DTC144ES HATCH SW
IC403 μPC45 R BKG CTL
Q410 2SC278 R BIAS DRV
IC503 μPC455 G BLK CTL
Q510 2SC278 G BIAS DRV
IC603 μPC4558C B BLK CTL
Q610 2SC2785 B BIAS DRV
TO DA BOARD (DA-8)
TO DA BOARD (DA-4)
TO DA BOARD (DA-3)
TO BA BOARD (BA-3)
TO DA BOARD (DA-2)


20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
TO BA BOARD (BA-6)
BB-15
BB-16
TO CAR BOARD (CAR-1)
BB-17
TO CAG BOARD (CAG-1)
BB-18
TO CAB BOARD (CAB-1)
R OUT
G OUT
B OUT
IC701 MC14538BP PULSE GE-1
D707 1SS119 IC PROT-2
Q709 2SC2785 INT CL P DRV
IC703 HD14538BP PULSE GE-1
IC705 HD14053BP SYNC SEL CTL
BH (PULSE GEN)
IC702 μPC393C SYNC MODE CTL
Q616 2SC3064 PK COMP REF
PEAK AGC ADJ
IC704 MC14538BCP
Q724 2SA1175
IC604 μPC4558C RGB BIAS CTL
Q615 2SA844 PK REF DRV
IC207 μPC4558C REF BIAS DRV
Q810 DTC144ES TEST MODE SW-2
BI (WB GEN)
IC801 HD14538BP WB GE-1
Q802 2SC2785 WB AMP-2
Q803 DTC144ES WB AMP-3
Q804 2SC2785 WB AMP-4
Q805 DTC144ES WB AMP-5
Q806 2SC2785 WB AMP-6
Q807 2SC2785 HATCH AMP-2
Q808 2SC2785 TEST AMP-1
Q809 2SA1175 TEST AMP-2
IC803 CX7948 HATCH GE
IC804 μPC78L05A +5V REG
Q812 DTC144ES TEST MODE SW-1
D801 1SS119 TEST SW-1
D802,803 1SS119 TEST SW-2,3
Q813 2SA1175 HATCH AMP-1
Q814 DTC144ES HATCH SW
IC401
IC401 MC1496P R DRV CTL
Q401 2SC2471 R AMP-4
IC402 HD14053BP R BLK CTL
IC403 μPC4558C R BKG CTL
Q410 2SC2785 R BIAS DRV
D401,402 1SS119 R BIAS-1,2
IC501
IC501 MC1496P G DRV CTL
Q501 2SC2471 G AMP-4
IC502 HD14053BP G BLK CTL
IC503 μPC4558C G BKG CTL
Q510 2SC2785 G BIAS DRV
D501,502 1SS119 G AMP BIAS-1,2
IC601
IC601 MC1496P B DRV CTL
Q601 2SC2471 B AMP-4
IC602 HD14053BP B BLK CTL
IC603 μPC4558C B BLK CTL
Q610 2SC2785 B BIAS DRV
D601,602 1SS119 B AMP BIAS-1,2

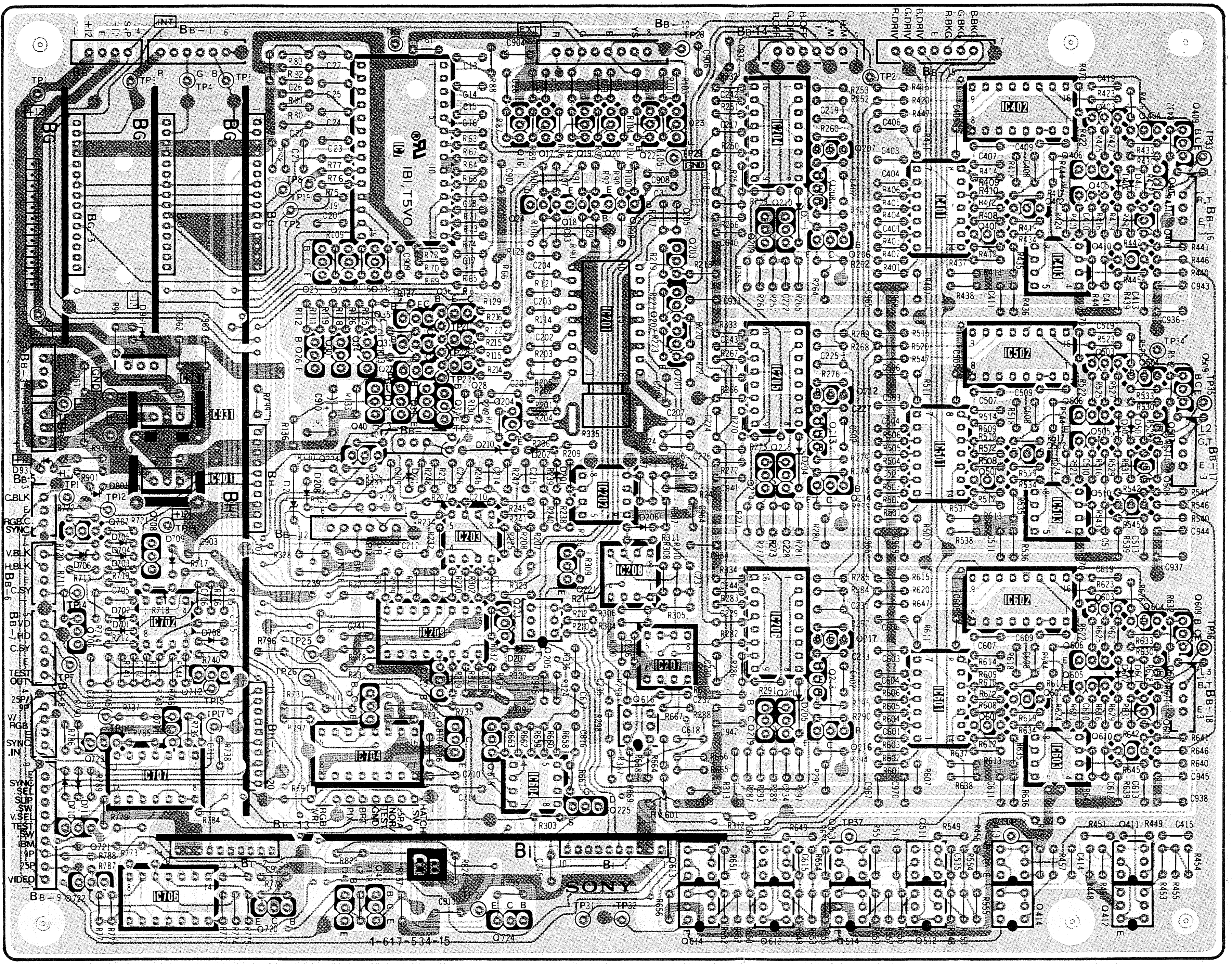
BB [SUPER IMPOSE, RGB DRIVE CTL, RGB BRT CTL, RGB BKG CTL, SYNC MODE CTL, RGB AMP]

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

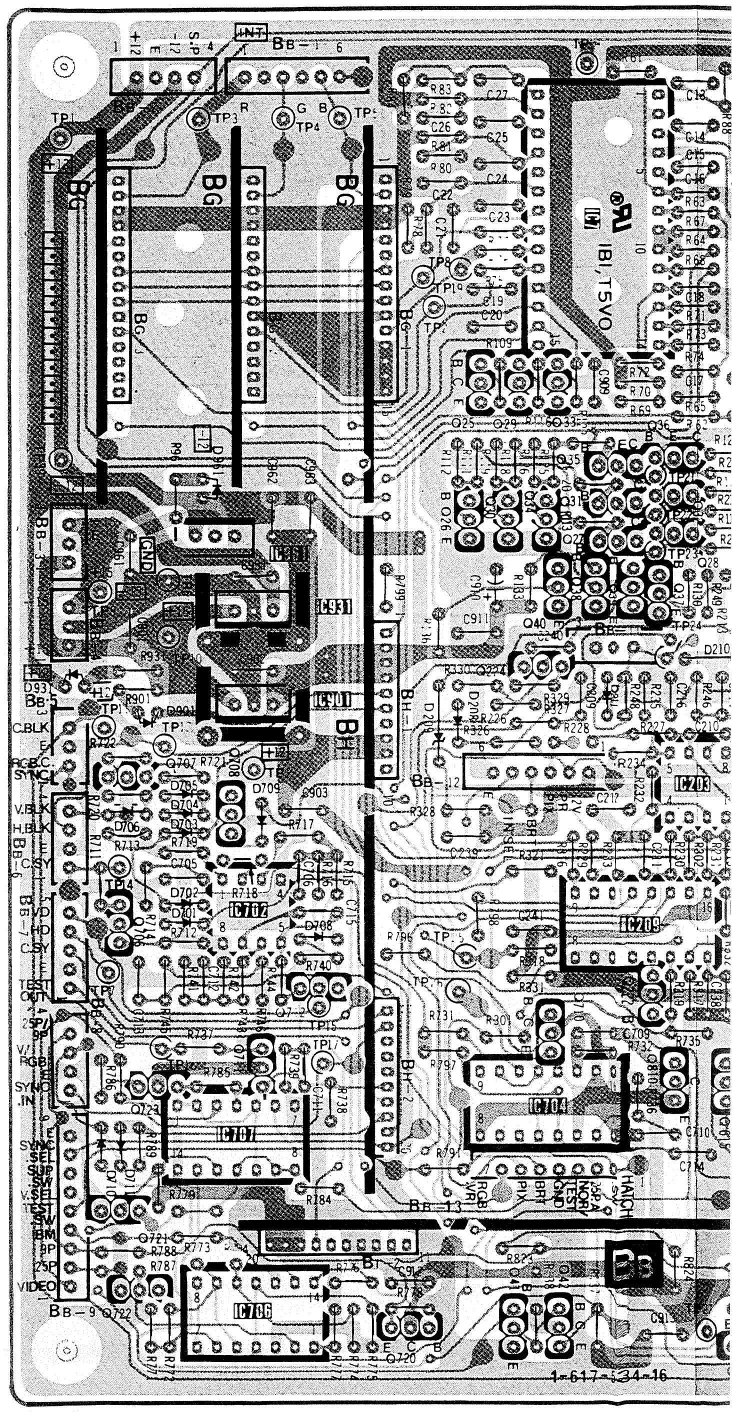
A B C D E F G H I J

– BB Board – (1-617-534-15)

Q , IC	D	ADJ,TP
		TP28 TP18
IC7		TP5 TP3
		TP2 TP4
		TP1
IC204		
403 IC402 23		
404		
16,22		
409,207,20,19,17		
406		
407		TP33 TP19
405	401 402	TP8
209,210,401		
402 208		TP20
IC401,21,24		
408 18	203	
410 206 203		
IC403		
33 29 25		
202		TP39
35 36 201	961	TP21
32 31		
IC201		
30		
IC502 34		TP34
IC205 27 26		
504 IC961		
503 28		
509 212		
213 39 38		TP9
40,37		
506		
IC931		
507 204	501 502	TP10
505 215		TP24
IC501 224	202 210	
502	931	
508 IC901	204 201	
214		
	208 211	
510 211 IC202	901	TP11
501 707	209	TP12
IC503	206	TP13
IC203	705	
	709	
	704	
	703 706	
IC208		
221		TP14
603,IC602		
604 IC702	702	
706,IC206,223	701	
609 IC209,205		
217	708	TP25
606		
IC207	207	TP36 TP7
607		
222,712	601 602	
605 220		TP15
602 218		TP26
IC601 710	205	TP16
608		
219 711		TP17
723		
216 810		
610		
601 IC704		
IC603 616		TP30
615		
IC604,IC707	711 710	
		RV601
225		
411,511,611		
413 513 721		TP38,TP37
613		
IC706 722		
414 41,42		TP32,TP27
412		
512 612 720		TP31
514 614 724		
Q , IC	D	ADJ,TP

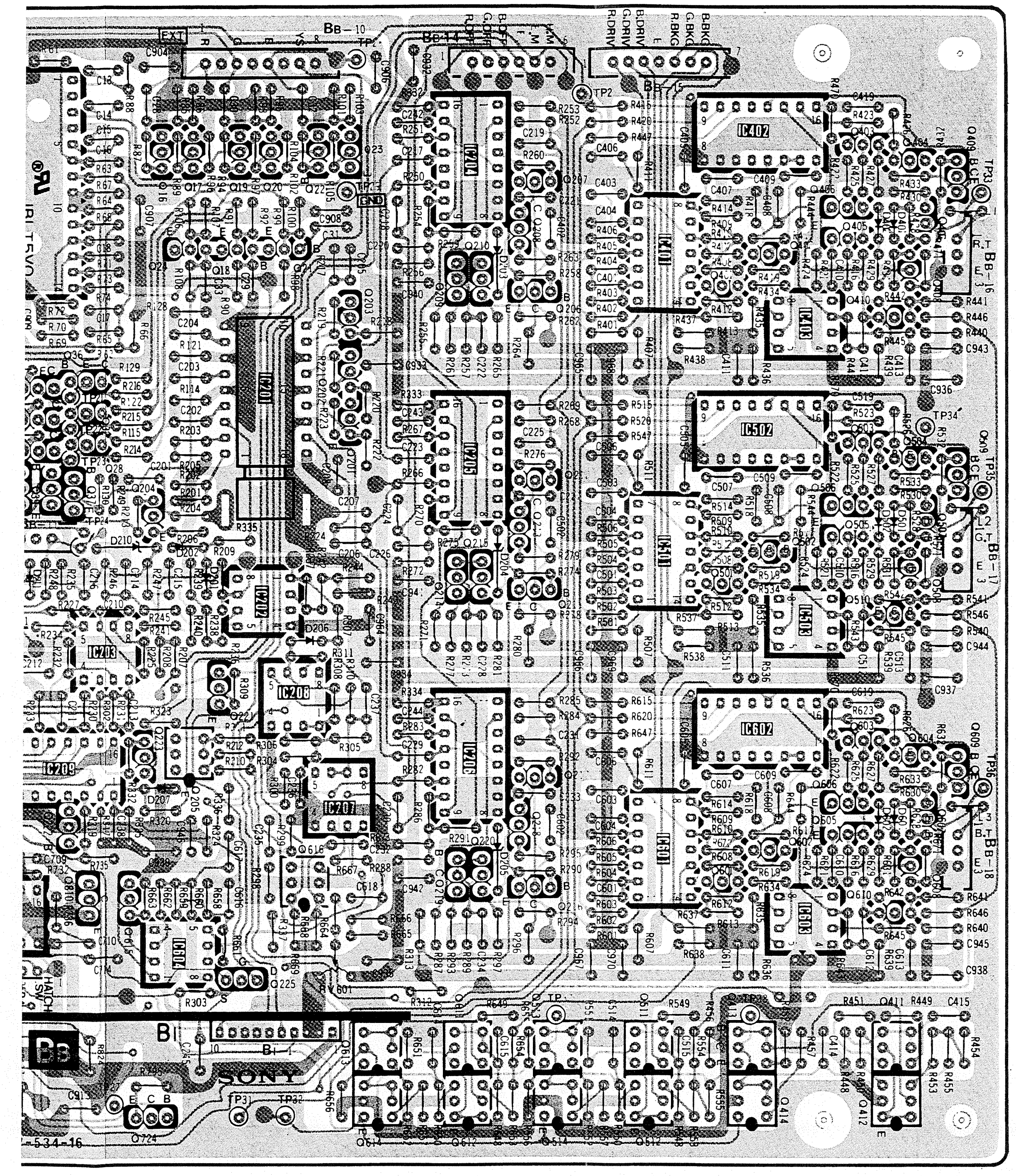

BB-10
BB-14
BB-1
BB-13
BB-9
IC402
IC502
IC602
IC704
IC707
IC706
IC931
IC901
IC203
IC208
IC209
IC207
IC702
BB
SONY
C.BLK
V.BLK
H.BLK
VIDEO
1-617-534-15

– BB Board – (1-617-534-16)

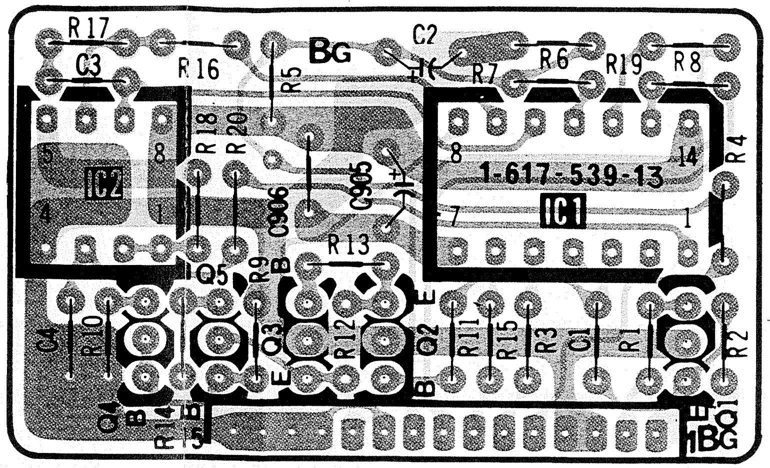

BB-1
BB-13
BB-9
IC931
IC901
IC702
IC704
IC707
IC706
IC209
BB
VIDEO
1-617-534-16

BG [RGB BIAS CTL] **BH** [PULSE GEN] **BI** [WB GEN]

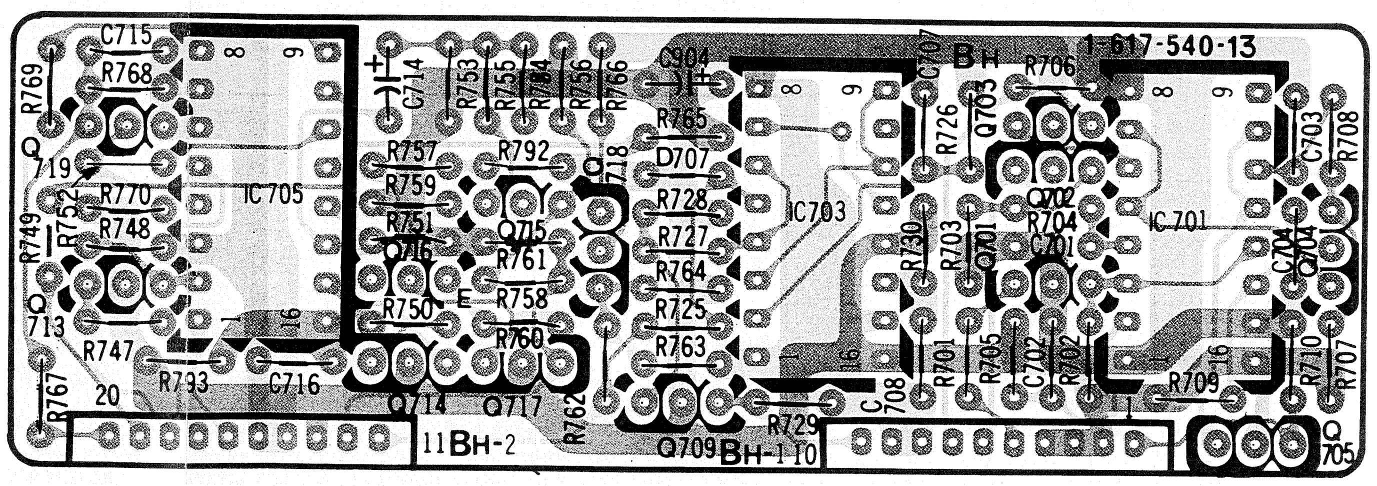
16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31


IC402
IC502
IC602
IC201
IC207
IC208
IC209
TP2
TP33
TP34
TP35
TP36
BB-16
BB-17
BB-18
BI
SONY
BB
1-534-16

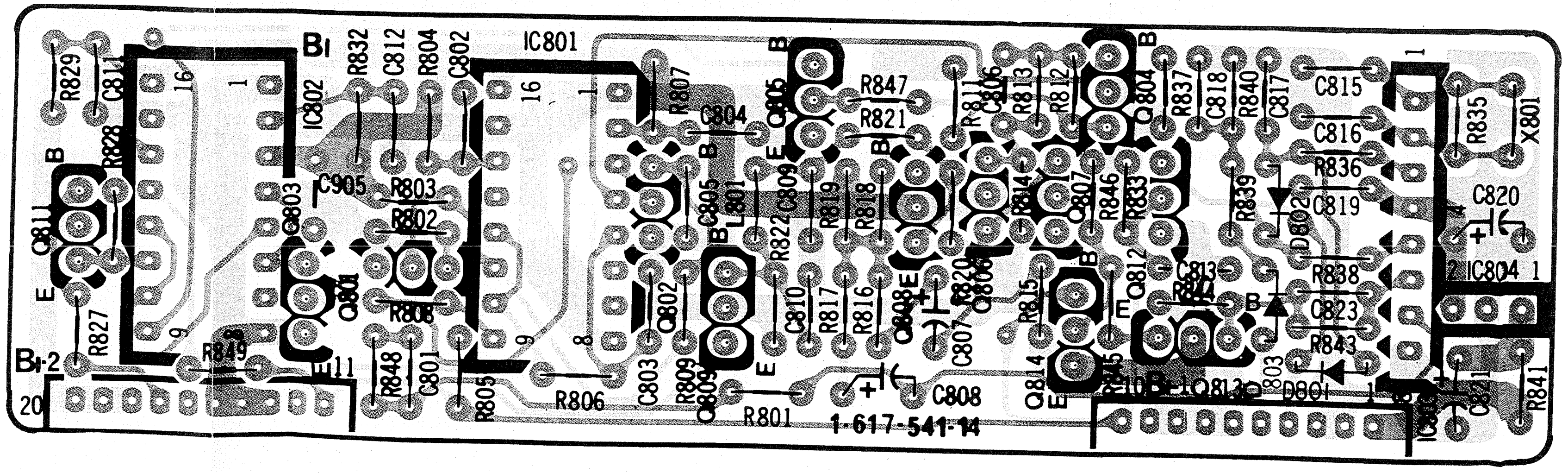
– BG Board –


BG
1-617-539-13
IC1
IC2
Q1
Q2
Q3
Q4
Q5
1BG

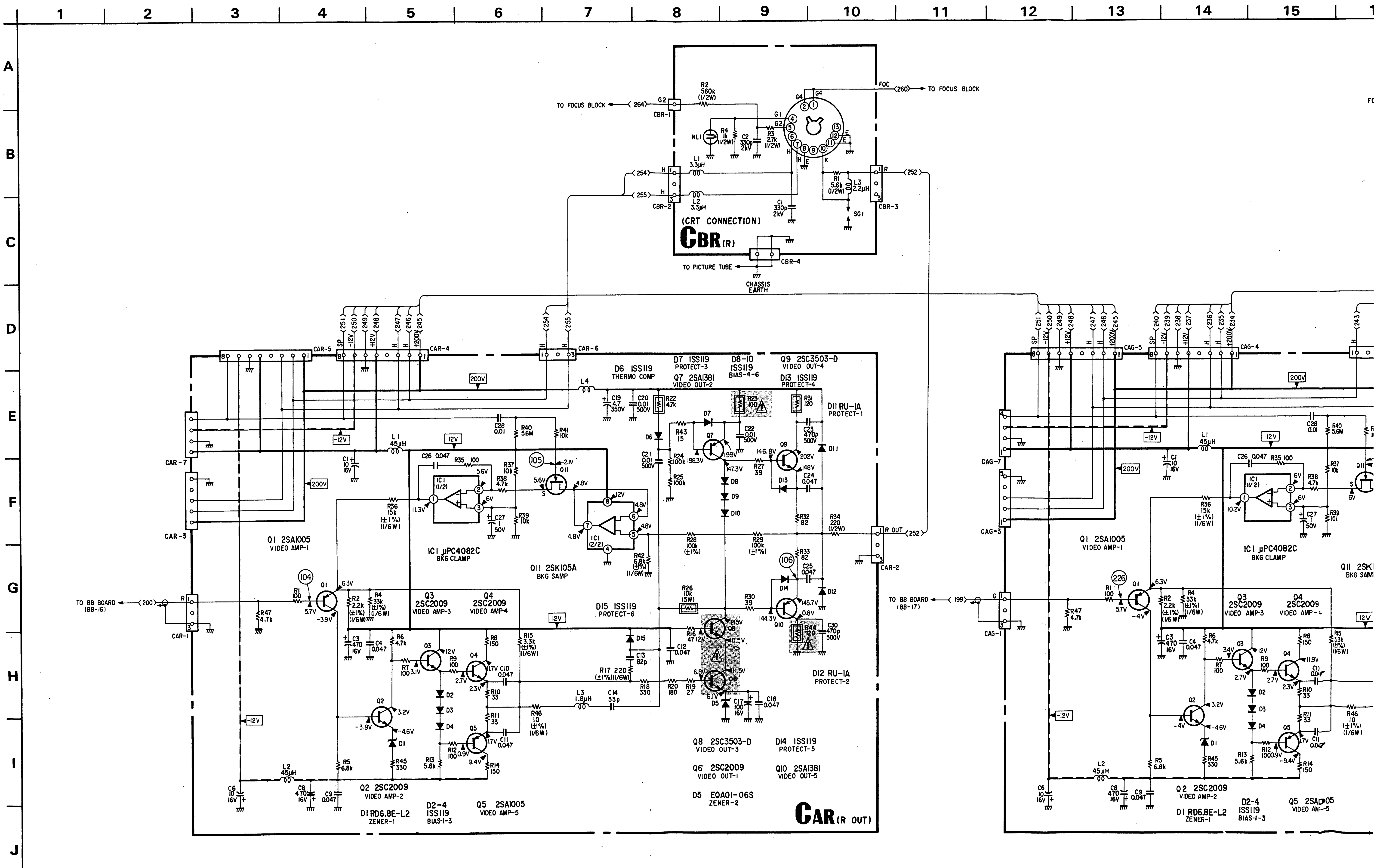
– BH Board –

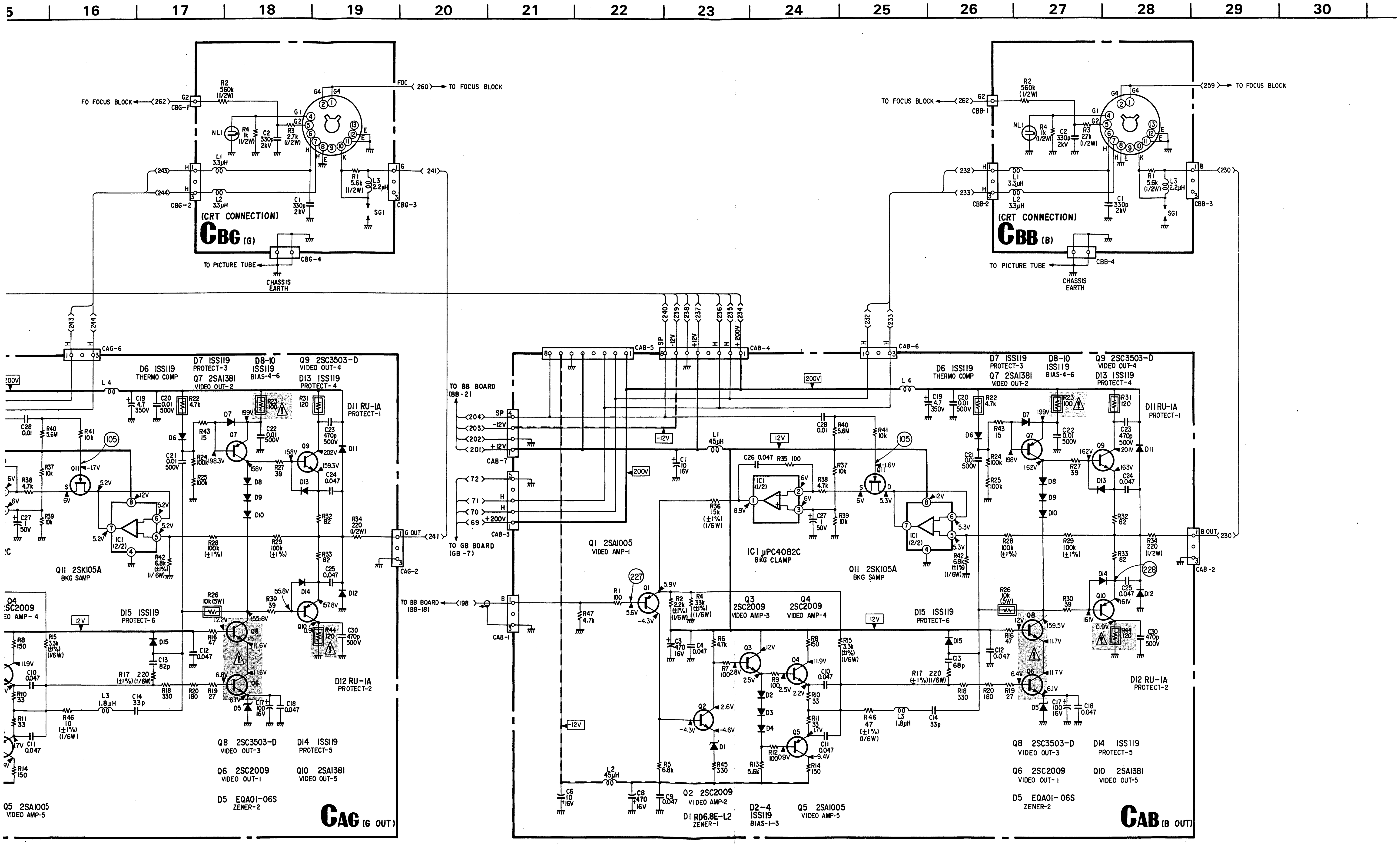

BH
1-617-540-13
IC705
IC703
IC701
BH-2
BH-1

– BI Board –


BI
IC801
IC802
IC803
IC804
X801
BI-2
BI-1
1-617-541-14

- ▨ : Conductor side pattern
- ░ : Component side pattern


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
TO FOCUS BLOCK
264
G2
CBR-1
R2 560k (1/2W)
G4
G1
G2
NL1
R4 1k (1/2W)
C2 330p 2kV
R3 2.7k (1/2W)
FOC
260
TO FOCUS BLOCK
254
255
CBR-2
L1 3.3μH
L2 3.3μH
C1 330p 2kV
R1 5.6k (1/2W)
L3 2.2μH
SG1
CBR-3
252
(CRT CONNECTION)
CBR(R)
CBR-4
TO PICTURE TUBE
CHASSIS EARTH
CAR-5
CAR-4
CAR-6
SP
-12V
+12V
+200V
H
200V
L4
D6 1SS119 THERMO COMP
D7 1SS119 PROTECT-3
Q7 2SA1381 VIDEO OUT-2
D8-10 1SS119 BIAS-4-6
Q9 2SC3503-D VIDEO OUT-4
D13 1SS119 PROTECT-4
D11 RU-1A PROTECT-1
C19 4.7 350V
C20 0.01 500V
R22 4.7k
R23 100
R31 120
C22 0.01 500V
C23 470p 500V
R43 15
R24 100k
R25 100k
C21 0.01 500V
R27 39
C24 0.047
CAR-7
CAR-3
-12V
12V
L1 45μH
C1 10 16V
C28 0.01
R40 5.6M
R41 10k
C26 0.047
R35 100
IC1 (1/2)
R37 10k
R38 4.7k
(105)
Q11
R36 15k (±1%) (1/6W)
C27 1 50V
R39 10k
IC1 (2/2)
R28 100k (±1%)
R29 100k (±1%)
R32 82
R33 82
R34 220 (1/2W)
R OUT
252
CAR-2
R42 6.8k (±1%) (1/6W)
Q1 2SA1005 VIDEO AMP-1
IC1 μPC4082C BKG CLAMP
Q11 2SK105A BKG SAMP
(106)
C25 0.047
D12
D14
TO BB BOARD (BB-16)
200
CAR-1
R47 4.7k
(104)
R1 100
R2 2.2k (±1%) (1/6W)
R4 33k (±1%) (1/6W)
Q3 2SC2009 VIDEO AMP-3
Q4 2SC2009 VIDEO AMP-4
D15 1SS119 PROTECT-6
R26 10k (5W)
R30 39
C30 470p 500V
R44 120
12V
C3 470 16V
C4 0.047
R6 4.7k
R7 100
R8 150
R9 100
C10 0.047
R15 3.3k (±1%) (1/6W)
D15
C13 82p
R16 47
Q8
C12 0.047
R17 220 (±1%)(1/6W)
R18 330
R20 180
R19 27
Q6
Q10
D12 RU-1A PROTECT-2
-12V
Q2
D1
D2
D3
D4
R10 33
R11 33
R46 10 (±1%) (1/6W)
L3 1.8μH
C14 33p
D5
C17 100 16V
C18 0.047
Q5
C11 0.047
R5 6.8k
R45 330
R13 5.6k
R12 100
R14 150
L2 45μH
C6 10 16V
C8 470 16V
C9 0.047
Q2 2SC2009 VIDEO AMP-2
D1 RD6.8E-L2 ZENER-1
D2-4 1SS119 BIAS-1-3
Q5 2SA1005 VIDEO AMP-5
Q8 2SC3503-D VIDEO OUT-3
Q6 2SC2009 VIDEO OUT-1
D5 EQA01-06S ZENER-2
D14 1SS119 PROTECT-5
Q10 2SA1381 VIDEO OUT-5
CAR(R OUT)
CAG-5
CAG-4
CAG-7
CAG-3
CAG-1
TO BB BOARD (BB-17)
199
(226)
Q1 2SA1005 VIDEO AMP-1
IC1 μPC4082C BKG CLAMP
Q11 2SK
Q3 2SC2009 VIDEO AMP-3
Q4 2SC2009 VIDEO AMP-4
Q2 2SC2009 VIDEO AMP-2
D1 RD6.8E-L2 ZENER-1
D2-4 1SS119 BIAS-1-3
Q5 2SA1005 VIDEO AMP-5

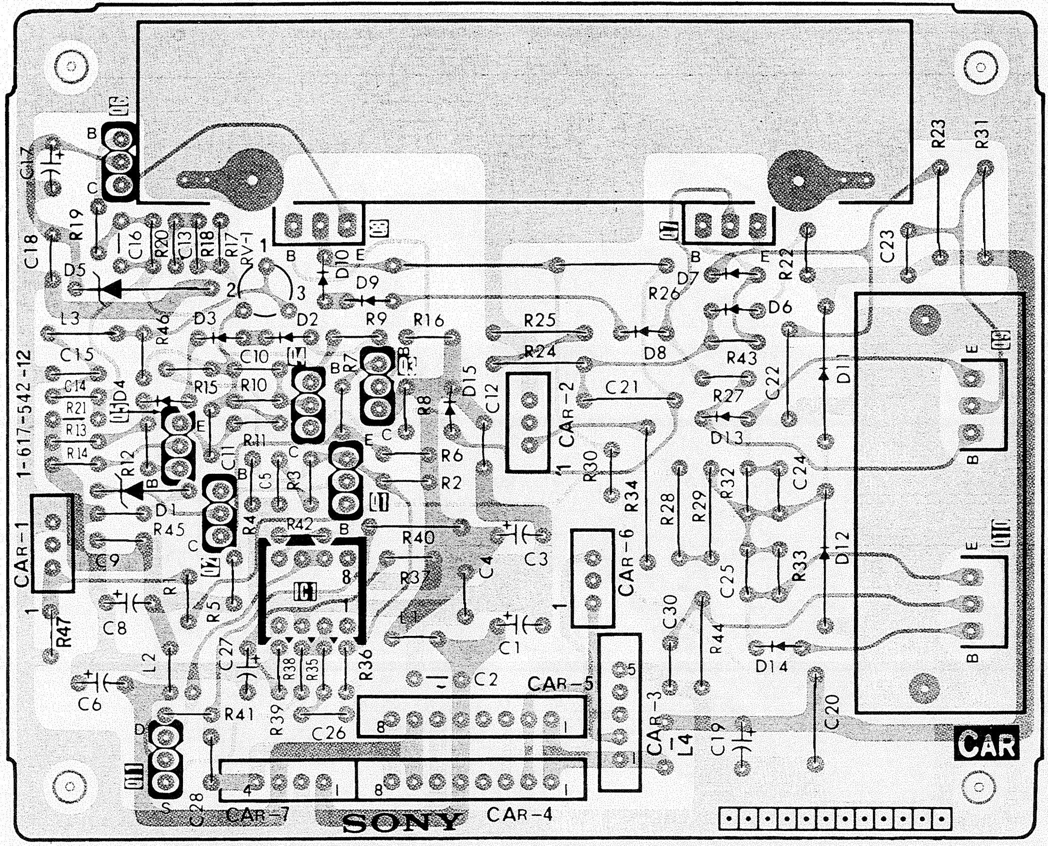

16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
CBG (G)
(CRT CONNECTION)
FO FOCUS BLOCK
TO FOCUS BLOCK
TO PICTURE TUBE
CHASSIS EARTH
R2 560k (1/2W)
R4 1k (1/2W)
C2 330p 2kV
R3 2.7k (1/2W)
NL1
L1 3.3μH
L2 3.3μH
C1 330p 2kV
R1 5.6k (1/2W)
L3 2.2μH
SG1
CBG-1 CBG-2 CBG-3 CBG-4
CBB (B)
CBB-1 CBB-2 CBB-3 CBB-4
CAG (G OUT)
CAG-2 CAG-6
G OUT
D6 1SS119 THERMO COMP
D7 1SS119 PROTECT-3
Q7 2SA1381 VIDEO OUT-2
D8-10 1SS119 BIAS-4-6
Q9 2SC3503-D VIDEO OUT-4
D13 1SS119 PROTECT-4
D11 RU-1A PROTECT-1
Q11 2SK105A BKG SAMP
IC1 (2/2)
D15 1SS119 PROTECT-6
D12 RU-1A PROTECT-2
Q8 2SC3503-D VIDEO OUT-3
D14 1SS119 PROTECT-5
Q6 2SC2009 VIDEO OUT-1
Q10 2SA1381 VIDEO OUT-5
D5 EQA01-06S ZENER-2
Q4 2SC2009
Q5 2SA1005 VIDEO AMP-5
TO BB BOARD (BB-2)
TO GB BOARD (GB-7)
TO BB BOARD (BB-18)
CAB-1 CAB-3 CAB-4 CAB-5 CAB-6 CAB-7
SP -12V +12V H +200V
Q1 2SA1005 VIDEO AMP-1
IC1 μPC4082C BKG CLAMP
Q3 2SC2009 VIDEO AMP-3
Q4 2SC2009 VIDEO AMP-4
Q2 2SC2009 VIDEO AMP-2
D1 RD6.8E-L2 ZENER-1
D2-4 1SS119 BIAS-1-3
Q5 2SA1005 VIDEO AMP-5
CAB (B OUT)
B OUT
200V
12V
-12V
105
227
228

CAR [R OUT] **CAG** [G OUT] **CAB** [B OUT] **CBR**

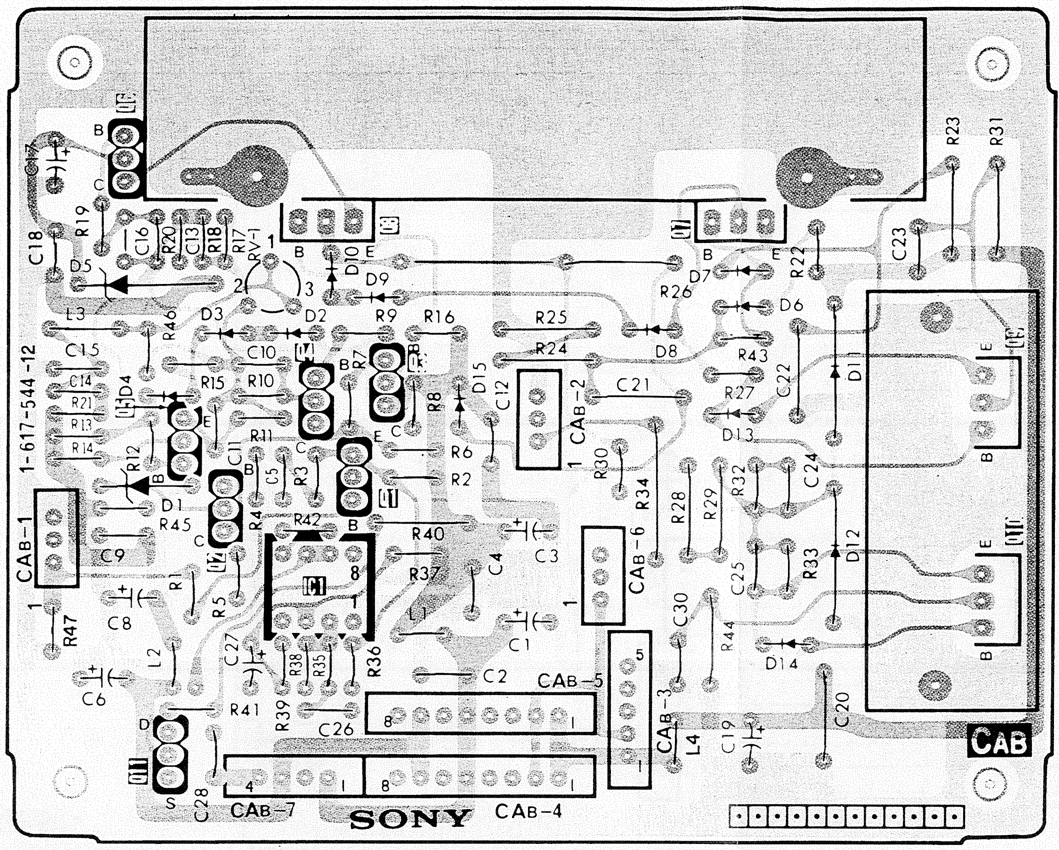
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A B C D E F G H I J

— CAR Board —

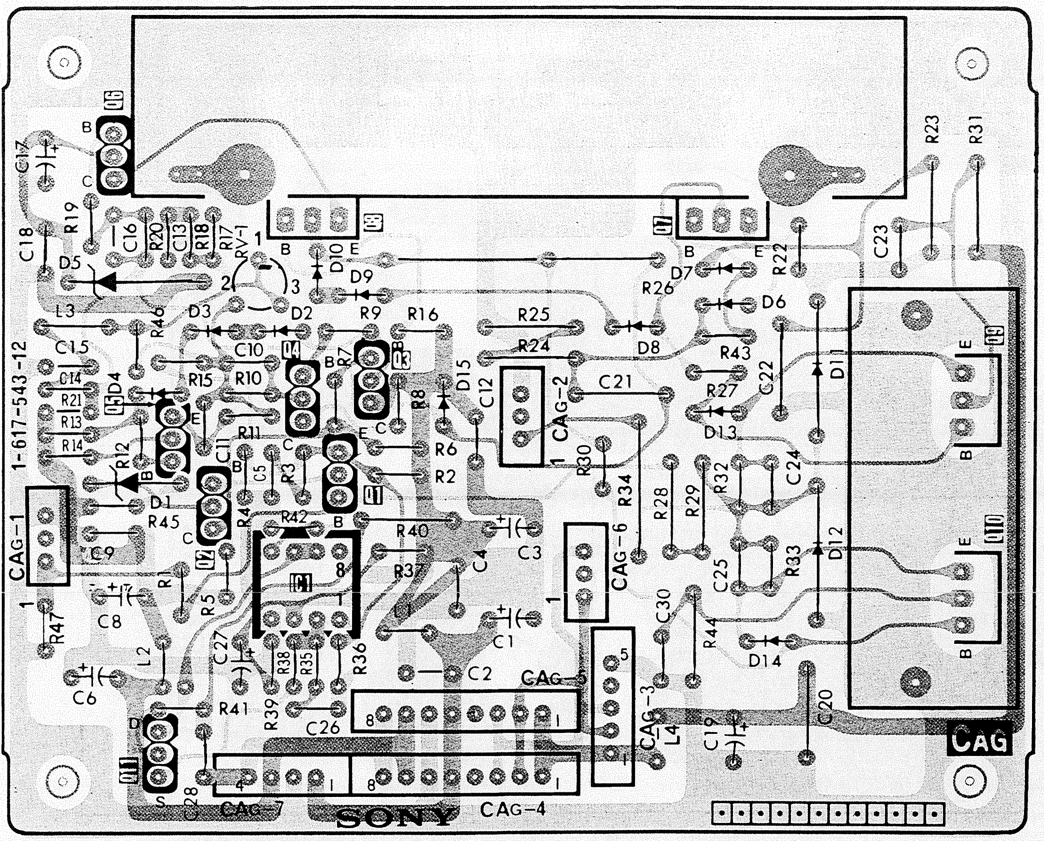

1-617-542-12
CAR
SONY
CAR-1
CAR-2
CAR-3
CAR-4
CAR-5
CAR-6
CAR-7

— CAB Board —

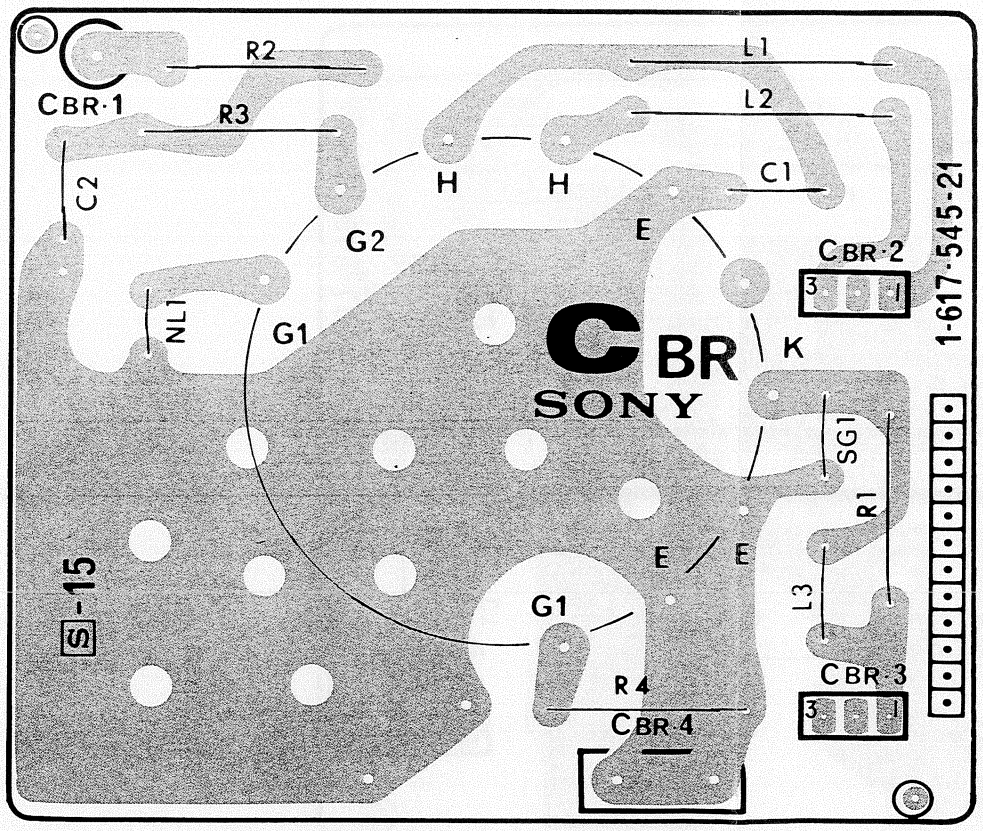

1-617-544-12
CAB
SONY
CAB-1
CAB-2
CAB-3
CAB-4
CAB-5
CAB-6
CAB-7

• ▨ : Conductor s
• ▨ : Component

— CAG Board —

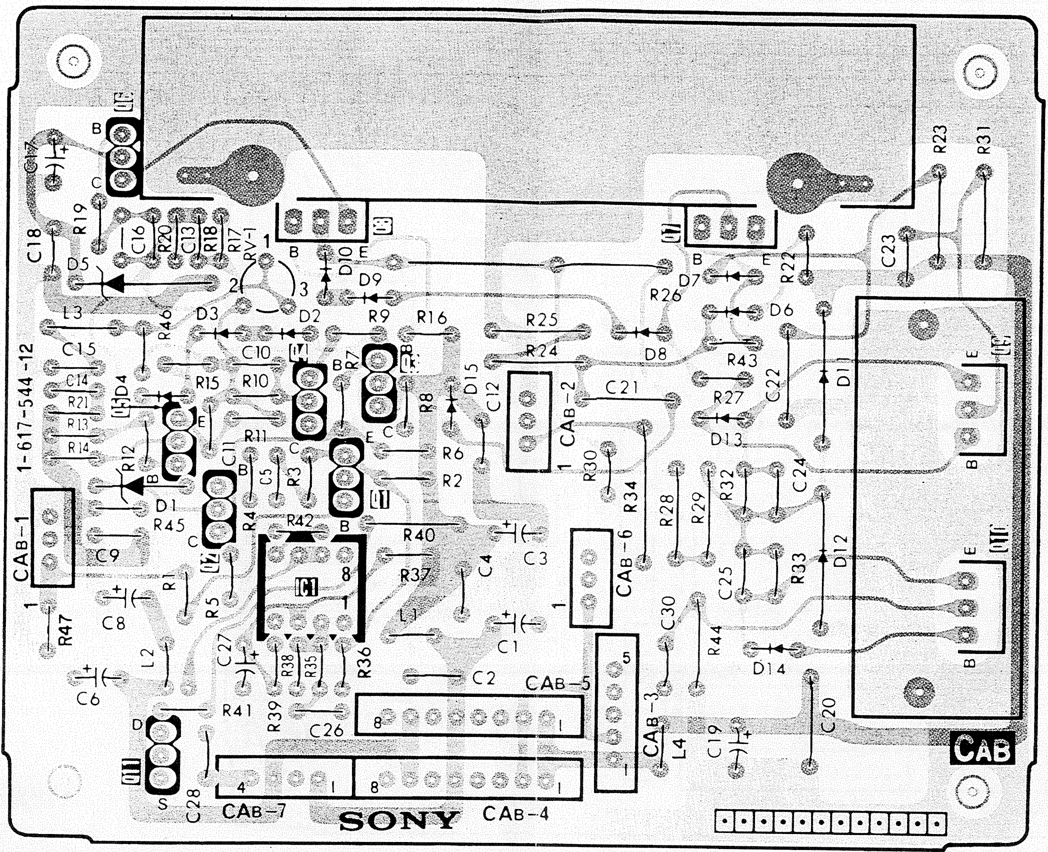

1-617-543-12
CAG
SONY
CAG-1
CAG-2
CAG-3
CAG-4
CAG-5
CAG-6
CAG-7

— CBR Board —

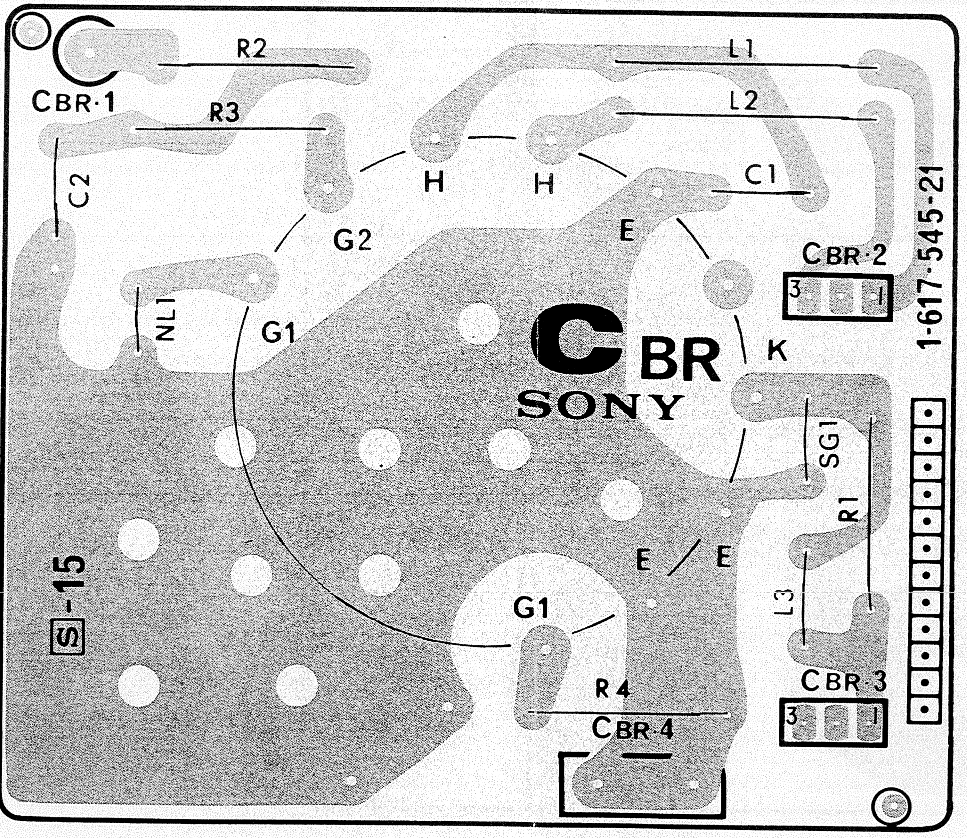

CBR·1
CBR·2
CBR·3
CBR·4
R2
R3
R4
R1
L1
L2
L3
C1
C2
NL1
SG1
H
H
G2
G1
G1
E
E
E
K
CBR
SONY
1-617-545-21
S-15

CAB [B OUT] **CBR** **CBG** **CBB**

– CAB Board –


CAB
SONY
1-617-544-12
CAB-1
CAB-2
CAB-3
CAB-4
CAB-5
CAB-6
CAB-7
RV-1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
R42
R43
R44
R45
R46
R47
C1
C2
C3
C4
C5
C6
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C30
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
L1
L2
L3
L4
B
C
E
S
D

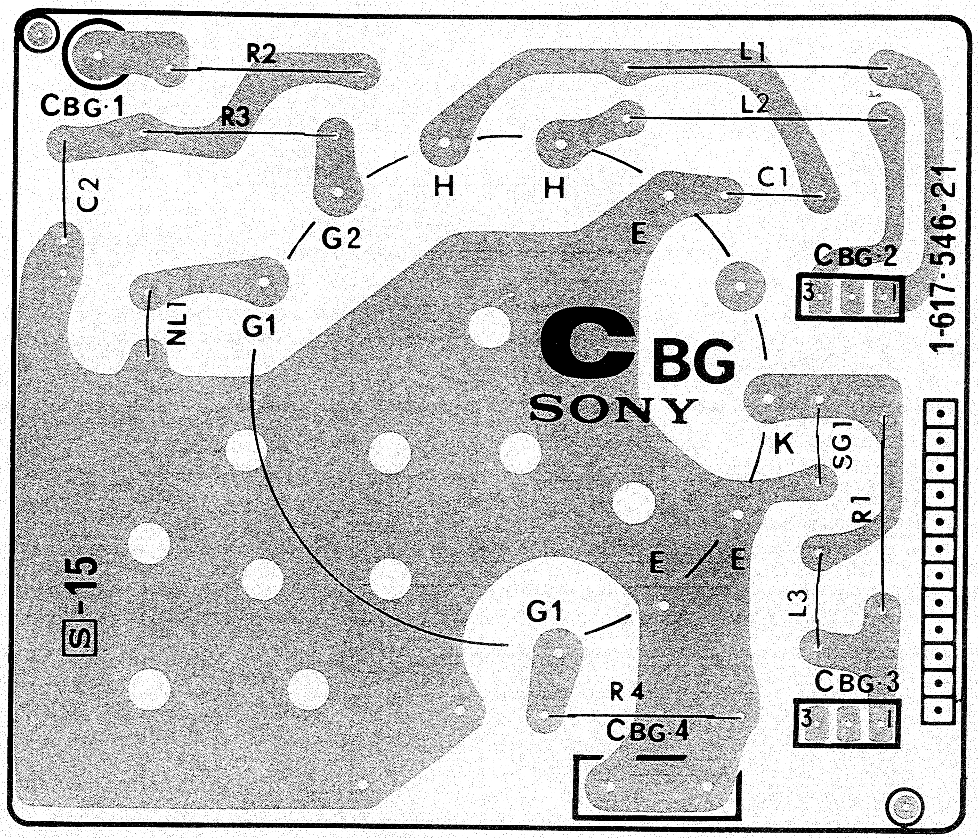
– CBR Board –


CBR·1
CBR·2
CBR·3
CBR·4
CBR
SONY
1-617-545-21
R2
R3
R4
R1
L1
L2
L3
C1
C2
NL1
H
H
G2
G1
G1
E
E / E
K
SG1
S-15
3
1

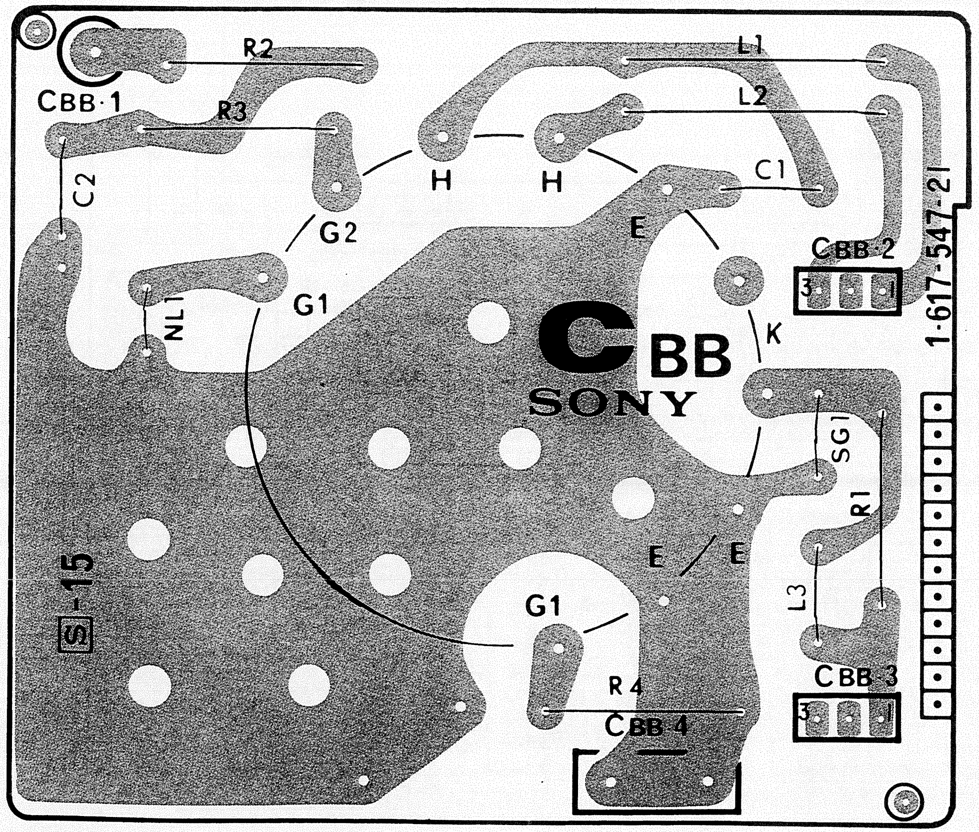
• ▨ : Conductor side pattern

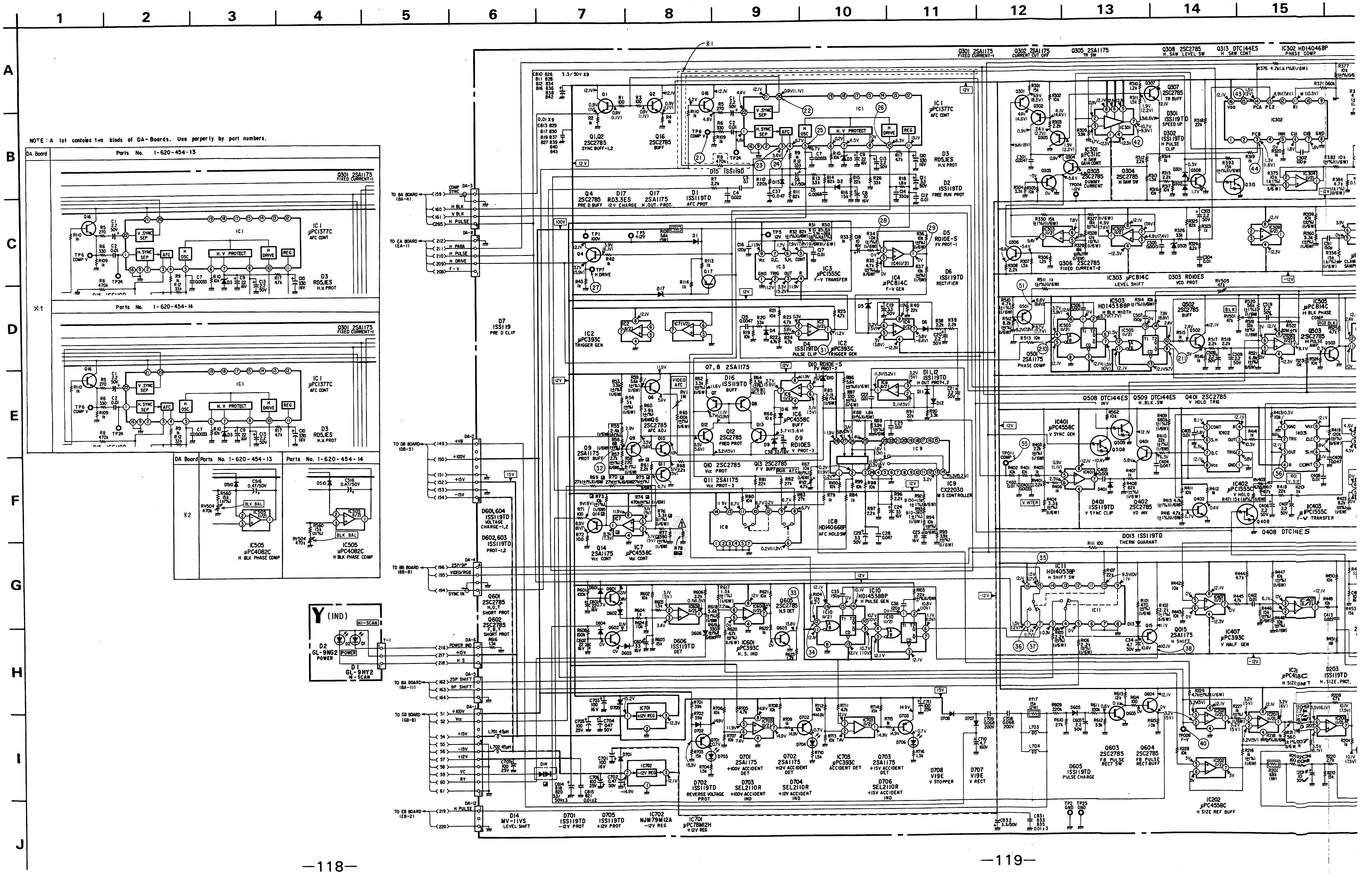
• ░ : Component side pattern

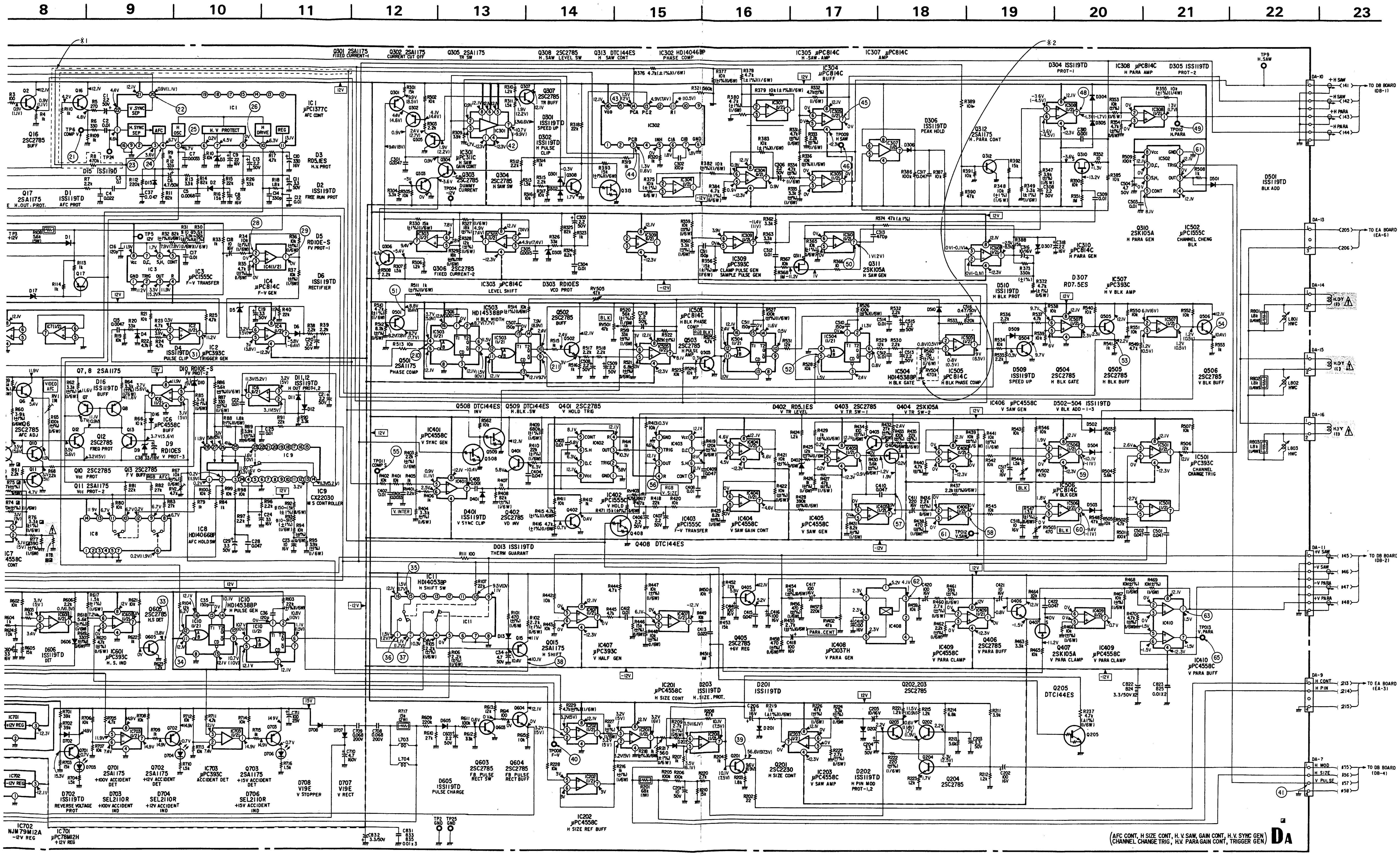
– CBG Board –


CBG·1
CBG·2
CBG·3
CBG·4
CBG
SONY
1-617-546-21
R2
R3
R4
R1
L1
L2
L3
C1
C2
NL1
H
H
G2
G1
G1
E
E / E
K
SG1
S-15
3
1

– CBB Board –


CBB·1
CBB·2
CBB·3
CBB·4
CBB
SONY
1-617-547-21
R2
R3
R4
R1
L1
L2
L3
C1
C2
NL1
H
H
G2
G1
G1
E
E / E
K
SG1
S-15
3
1

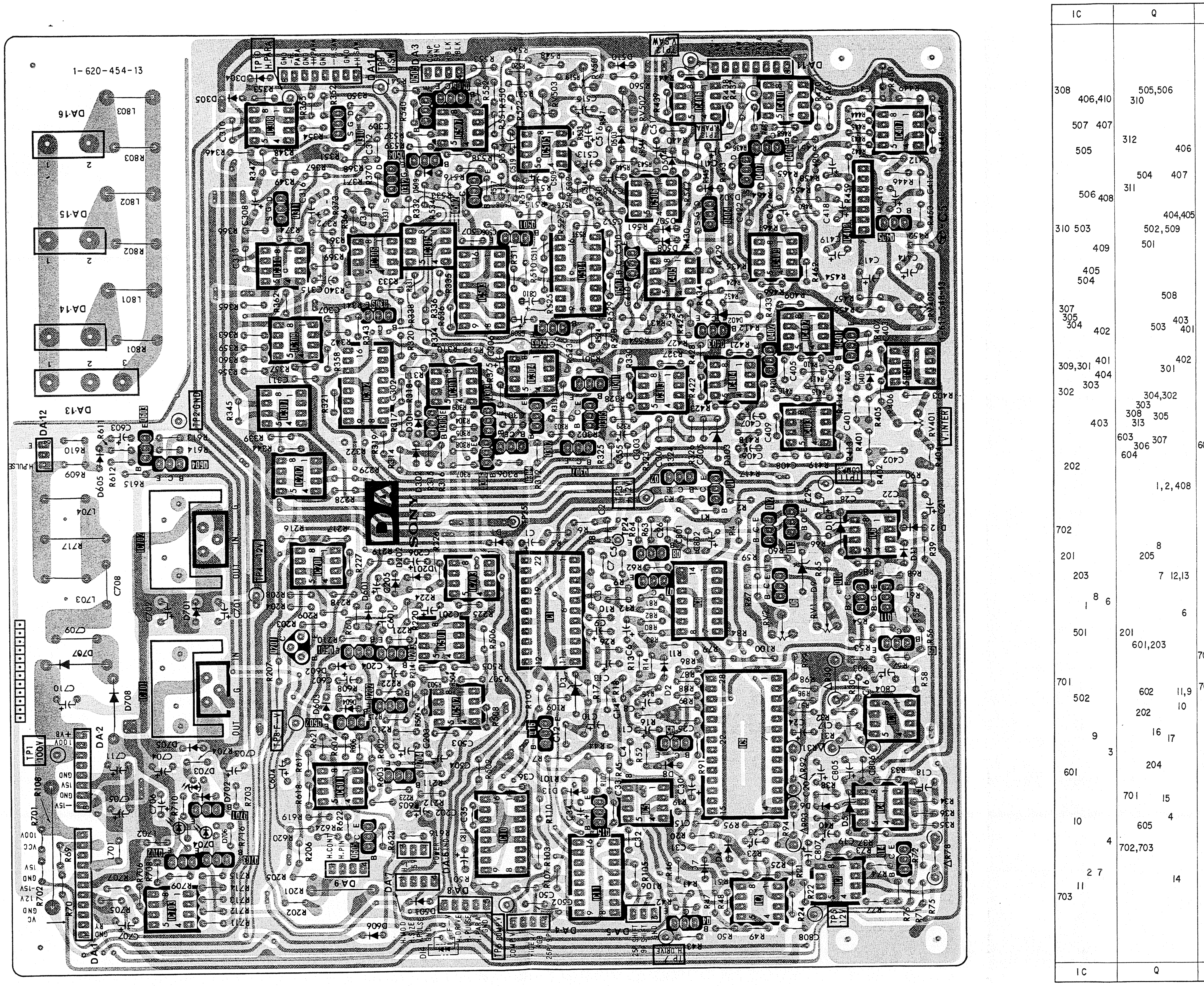

NOTE : A lot contains two kinds of DA-Boards. Use porperly by part numbers.
DA Board
Parts No. 1-620-454-13
Parts No. 1-620-454-14
※1
※2
IC1 μPC1377C AFC CONT
IC2 μPC393C TRIGGER GEN
IC3 μPC1555C F-V TRANSFER
IC4 μPC814C F-V GEN
IC6 μPC4558C BUFF
IC7 μPC4558C Vcc CONT
IC8 HD14066BP AFC HOLD SW
IC9 CX22030 M S CONTROLLER
IC10 HD14538BP H PULSE GEN
IC11 HD14053BP H SHIFT SW
IC301 μPC311C H SAW GAIN CONT
IC302 HD14046BP PHASE COMP
IC303 μPC814C LEVEL SHIFT
IC401 μPC4558C V SYNC GEN
IC402 μPC1555C V HOLD
IC403 μPC1555C F-V TRANSFER
IC407 μPC393C V HALF GEN
IC505 μPC4082C H BLK PHASE COMP
IC601 μPC393C H.S. IND
IC701 μPC78M12H +12V REG
IC702 NJM79M12A -12V REG
IC703 μPC393C ACCIDENT DET
IC202 μPC4558C H SIZE REF BUFF
Y (IND)
D2 GL-9NG2 POWER
D1 GL-9HY2 HI-SCAN
TO BA BOARD (BA-4)
TO EA BOARD (EA-11)
TO DB BOARD (DB-5)
TO BB BOARD (BB-8)
TO BA BOARD (BA-11)
TO GB BOARD (GB-8)
TO EB BOARD (EB-2)
D14 MV-11VS LEVEL SHIFT
D7 1SS119 PRE D CLIP
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
IC1 μPC1377C AFC CONT
IC3 μPC1555C F-V TRANSFER
IC4 μPC814C F-V GEN
IC6 μPC4558C
IC8 HD14066BP AFC HOLD SW
IC9 CX22030 M S CONTROLLER
IC10 HD14538BP H PULSE GEN
IC11 HD14053BP H SHIFT SW
IC301 μPC311C H SAW GAIN CONT
IC302 HD14046BP PHASE COMP
IC303 μPC814C LEVEL SHIFT
IC305 μPC814C H.SAW.AMP
IC307 μPC814C AMP
IC308 μPC814C H PARA AMP
IC309 μPC393C CLAMP PULSE GEN SAMPLE PULSE GEN
IC310 μPC814C H PARA GEN
IC401 μPC4558C V SYNC GEN
IC402 μPC1555C V HOLD
IC403 μPC1555C F-V TRANSFER
IC404 μPC4558C V SAW GAIN CONT
IC405 μPC4558C V SAW GEN
IC406 μPC4558C V SAW GEN
IC407 μPC393C V HALF GEN
IC408 μPC1037H V PARA GEN
IC409 μPC4558C V PARA CLAMP
IC410 μPC4558C V PARA BUFF
IC501 μPC393C CHANNEL CHANGE TRIG
IC502 μPC1555C CHANNEL CHENG BLK
IC503 HD14538BP H BLK WIDTH
IC504 HD14538BP H BLK GATE
IC505 μPC814C H BLK PHASE COMP
IC506 μPC814C V BLK GEN
IC507 μPC393C H V BLK AMP
IC601 μPC393C H. S. IND
IC201 μPC4558C H SIZE CONT
IC202 μPC4558C H SIZE REF BUFF
IC203 μPC4558C V SAW AMP
IC701 μPC78M12H +12V REG
IC702 NJM79M12A -12V REG
TO DB BOARD (DB-1)
TO EA BOARD (EA-6)
TO DB BOARD (DB-2)
TO EA BOARD (EA-3)
TO DB BOARD (DB-4)
(AFC CONT, H SIZE CONT, H. V. SAW, GAIN CONT, H.V. SYNC GEN)
(CHANNEL CHANGE TRIG, H.V. PARA GAIN CONT, TRIGGER GEN)
DA

DA AFC CONT, H SIZE CONT, H.V.SAW, GAIN CONT, H.V. SYNC GEN, CHANNEL CHENG TRIG, H.V.PARA GAIN, GAIN CONT, TRIGGER GEN

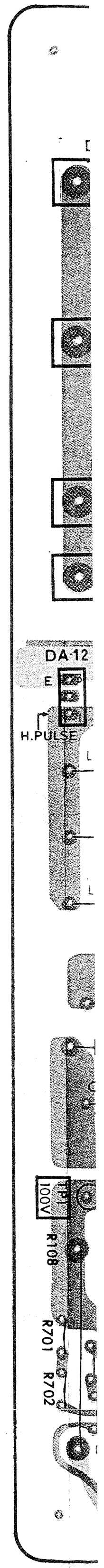
– DA Board – (1-620-454-13)

	IC	Q	D	ADJ,TP
A			304 510	TP12 TP10 TP9 501
B	406,410 308,507 407 505	505,506 310 312 504 406 407	305 503 504	TP13 503 502
C	506 408 305 310 409 503,504 405	311 502 404 405 501 507	502 507 508	
D	309 402 304 401 301 404 307 303 302	503 403 401 402 301	402 401	402
E	403 202	304,302 303 308 305 603 307 306 604 1,2	301 303 605 302	TP2 401 TP11 403 TP3
F	702 6 201 203 8 1	12,13 8 205 7 6,10,11	10 , 12 1 11 9 202 201 701,601	TP25 TP24 1 2 TP4
G	501 701 502 3	201 9 601,203 202 602	707 602 2 3 708 603,604	TP8
H	9 601 4 10	16 5 204 701 15	705 703 8 13 702 6 5	TP1
I	2 7 11 703	605 702,703 14 4	704,706 4 606 7 501 606 14	TP6 TP7,TP5
J	IC	Q	D	ADJ .TP


1-620-454-13
DA-16
DA-15
DA-14
DA-13
DA-12
DA2
DA3
DA4
DA5
DA7
DA8
DA9
DA11
H.PULSE
V.INTER
H.V.SAW
TP1
TP2
TP5
TP7
TP8
TP10
TP11
TP12
TP24
SONY

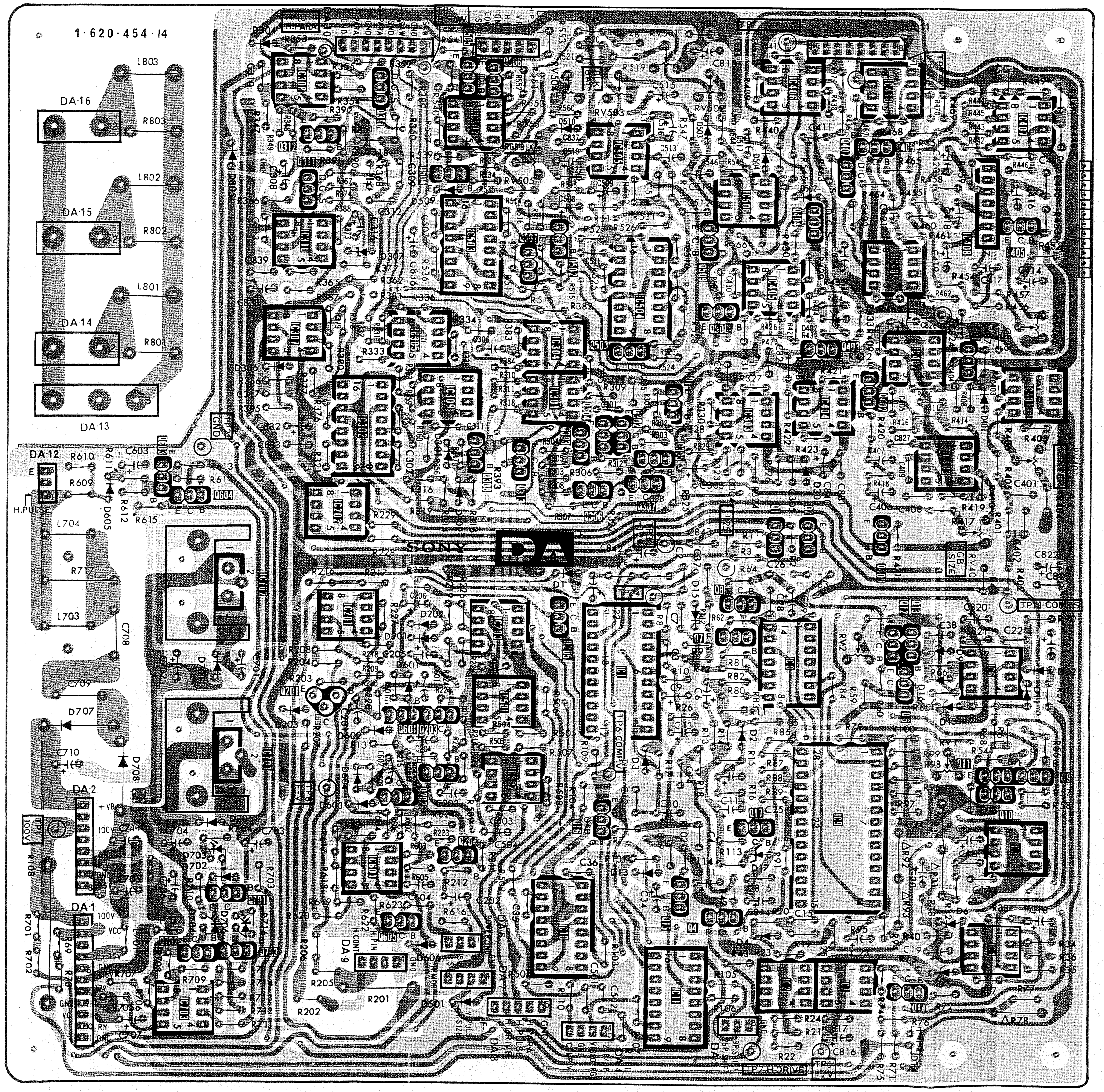
– DA Board – (1-620-454-14)

	IC	Q	D	ADJ,TP
A			304	TP12 TP10 TP9 501 TP13
B	308 406,410 507 407 505	505,506 310 312 406 504 407 311	510 503 305 504 509 502	503 504,502 505
C	506 408 310 503 409 405 504	404,405 502,509 501 508	307 402	TP4 402
D	307 305 304 402 309,301 401 404 303 302	403 503 401 402 301 304,302 303	306 401	
E	403 202	308 305 313 603 307 306 604 1,2,408	301 303 605 302 1	TP2 401 403 TP3 TP25
F	702 201 203 8 6 1	8 205 7 12,13 6	15 202 201 9 12 701 16 601	TP24,TP11 2
G	501 701 502	201 601,203 602 11,9 10 202	10,11 203 707 602 2 3 708 604 603	1 TP6 TP8
H	9 3 601 10	16 17 204 701 15 4 605	705 703 17 13 702 6 704,706 4	TP1
I	4 2 7 11 703	702,703 14	606 5 501 14	TP7,TP5
J	IC	Q	D	ADJ .TP

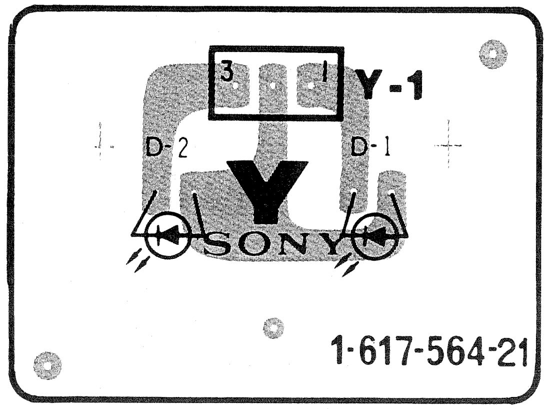

DA-12
H.PULSE
TP1
100V
R701
R702

Y [IND]

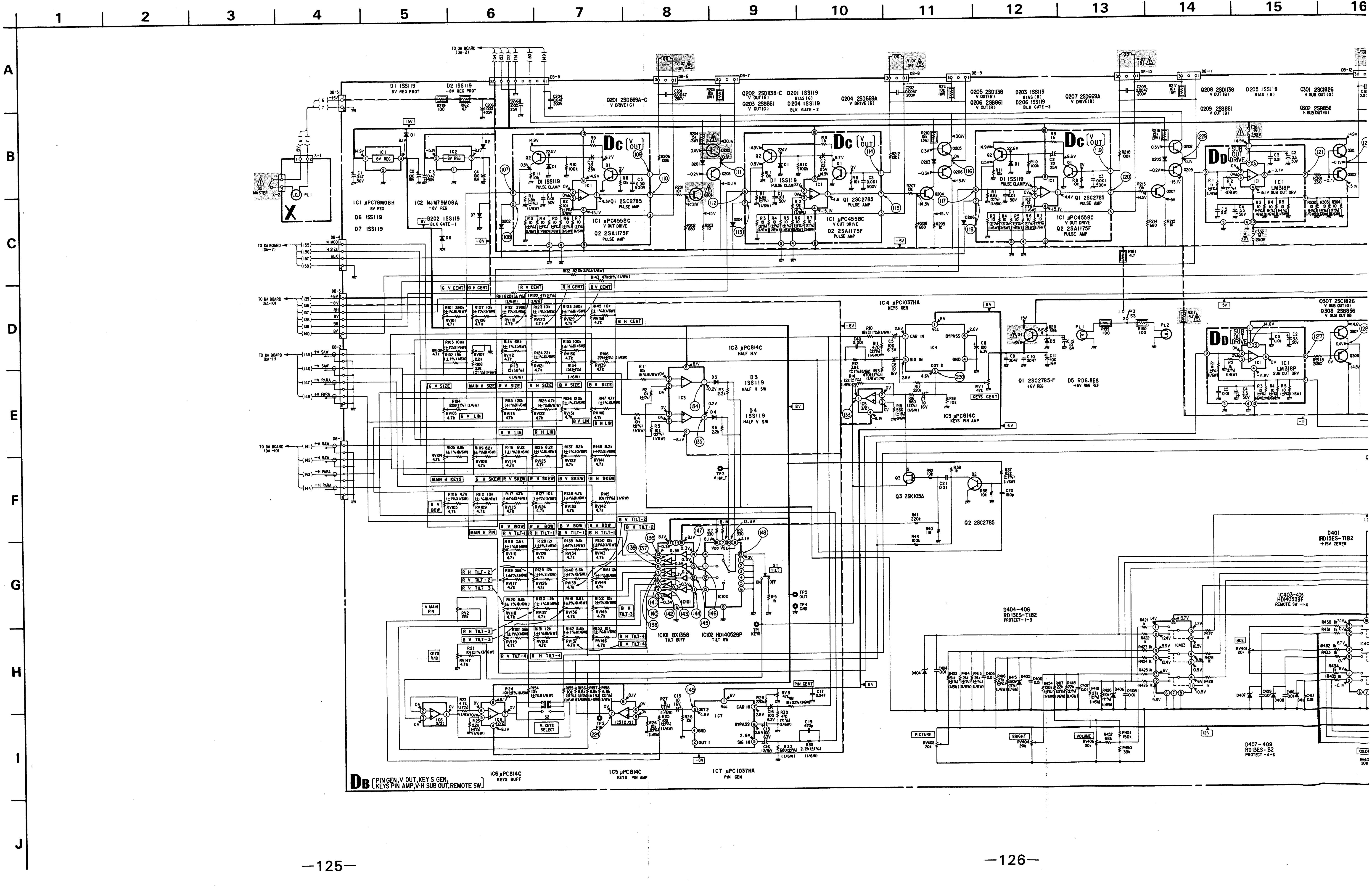
16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31

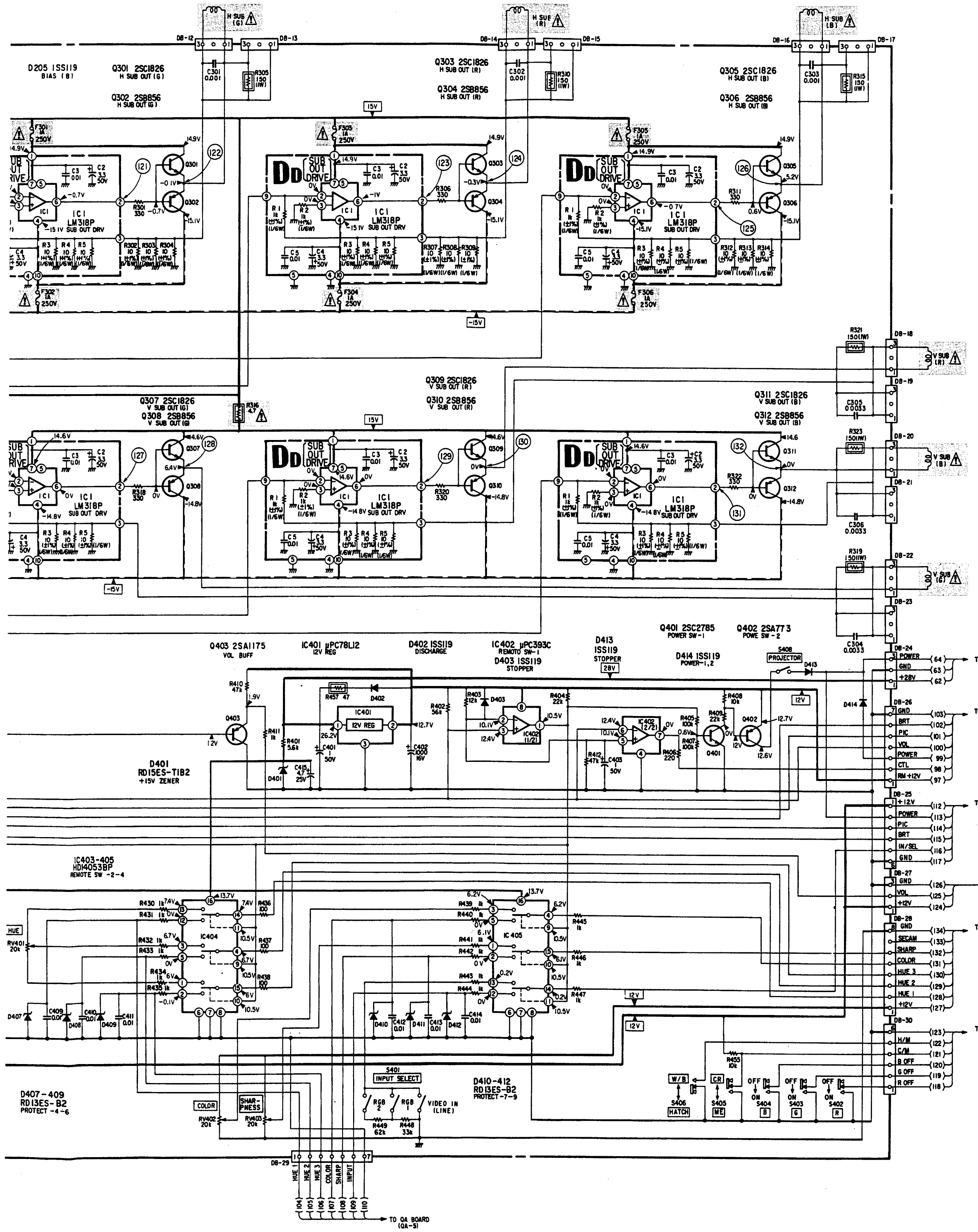

1-620-454-14
DA-16
DA-15
DA-14
DA-13
DA-12
DA-2
DA-1
DA-9
L803
L802
L801
R803
R802
R801
H.PULSE
SONY
DA

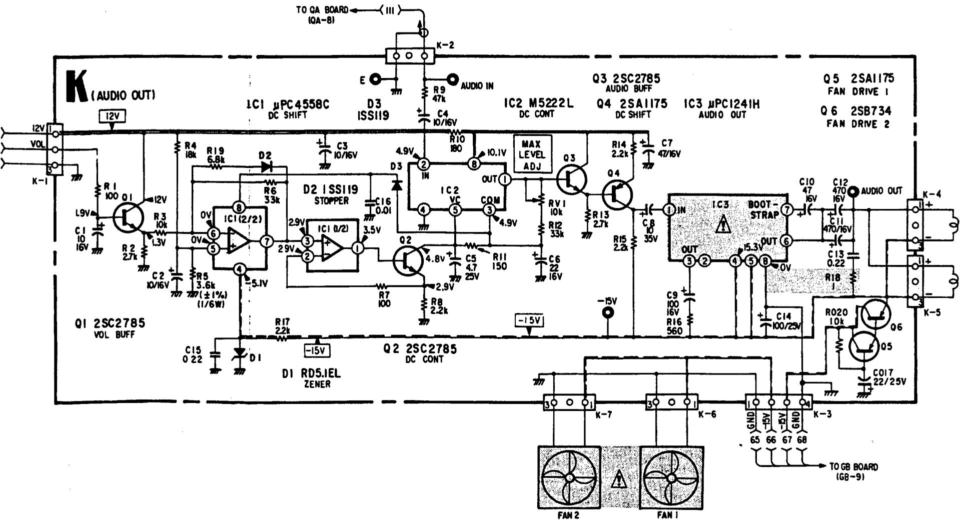
– Y Board –


Y-1
D-2
D-1
Y
SONY
1-617-564-21

- ● ▨ : Conductor side pattern
- ● ░ : Component side pattern


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
S2 MASTER
PL1
X
IC1 μPC78M08H
IC2 NJM79M08A
D6 1SS119
D7 1SS119
D1 1SS119 8V REG PROT
D2 1SS119 -8V REG PROT
Q201 2SD669A-C V DRIVE(G)
Q202 2SD1138-C V OUT(G)
Q203 2SB861 V OUT(G)
D201 1SS119 BIAS(G)
D204 1SS119 BLK GATE-2
Q204 2SD669A V DRIVE(R)
Q205 2SD1138 V OUT(R)
Q206 2SB861 V OUT(R)
D203 1SS119 BIAS(R)
D206 1SS119 BLK GATE-3
Q207 2SD669A V DRIVE(B)
Q208 2SD1138 V OUT(B)
Q209 2SB861 V OUT(B)
D205 1SS119 BIAS(B)
Q301 2SC1826 H SUB OUT(G)
Q302 2SB856 H SUB OUT(G)
Dc (V OUT)
IC1 μPC4558C V OUT DRIVE
Q1 2SC2785 PULSE AMP
Q2 2SA1175F PULSE AMP
D1 1SS119 PULSE CLAMP
Db (SUB OUT DRIVE)
IC1 LM318P SUB OUT DRV
TO DA BOARD (DA-2)
TO DA BOARD (DA-7)
TO DA BOARD (DA-10)
TO DA BOARD (DA-11)
G V CENT
G H CENT
R V CENT
R H CENT
B V CENT
B H CENT
G V SIZE
MAIN H SIZE
R V SIZE
R H SIZE
B V SIZE
B H SIZE
G V LIN
B V LIN
B H LIN
R V LIN
R H LIN
MAIN H KEYS
G H SKEW
R V SKEW
R H SKEW
B V SKEW
B H SKEW
G V BOW
R V BOW
R H BOW
B V BOW
B H BOW
MAIN H PIN
R V TILT-1
R H TILT-1
B V TILT-1
B H TILT-1
B V TILT-2
B H TILT-2
R H TILT-2
R V TILT-2
R V TILT-3
R H TILT-3
B H TILT-3
B H TILT-4
B V TILT-4
R V TILT-4
R H TILT-4
V MAIN PIN
KEYS R/B
IC3 μPC814C HALF H.V
D3 1SS119 HALF H SW
D4 1SS119 HALF V SW
TP3 V HALF
IC4 μPC1037HA KEYS GEN
IC5 μPC814C KEYS PIN AMP
KEYS CENT
Q1 2SC2785-F +6V REG
D5 RD6.8ES +6V REG REF
PL1
PL2
S3
Q3 2SK105A
Q2 2SC2785
Q307 2SC1826 V SUB OUT(G)
Q308 2SB856 V SUB OUT(G)
IC101 BX1358 TILT BUFF
IC102 HD14052BP TILT SW
S1 TILT ON OFF
TP5 OUT
TP4 GND
TP1 KEYS
TP2 PIN
PIN CENT
V. KEYS SELECT
IC6 μPC814C KEYS BUFF
IC5 μPC814C KEYS PIN AMP
IC7 μPC1037HA PIN GEN
Db [PIN GEN, V OUT, KEY S GEN, KEYS PIN AMP, V-H SUB OUT, REMOTE SW]
D401 RD15ES-T1B2 +15V ZENER
D404-406 RD13ES-T1B2 PROTECT-1-3
IC403-405 HD14053BP REMOTE SW-4
D407-409 RD13ES-B2 PROTECT-4-6
PICTURE
BRIGHT
VOLUME
HUE
COLOR


H SUB (G)
H SUB (R)
H SUB (B)
D205 1SS119 BIAS (B)
Q301 2SC1826 H SUB OUT (G)
Q302 2SB856 H SUB OUT (G)
Q303 2SC1826 H SUB OUT (R)
Q304 2SB856 H SUB OUT (R)
Q305 2SC1826 H SUB OUT (B)
Q306 2SB856 H SUB OUT (B)
DD SUB OUT DRIVE
IC1 LM318P SUB OUT DRV
Q307 2SC1826 V SUB OUT (G)
Q308 2SB856 V SUB OUT (G)
Q309 2SC1826 V SUB OUT (R)
Q310 2SB856 V SUB OUT (R)
Q311 2SC1826 V SUB OUT (B)
Q312 2SB856 V SUB OUT (B)
V SUB (R)
V SUB (B)
V SUB (G)
Q403 2SA1175 VOL BUFF
IC401 μPC78L12 12V REG
D402 1SS119 DISCHARGE
IC402 μPC393C REMOTO SW-1
D403 1SS119 STOPPER
D413 1SS119 STOPPER
Q401 2SC2785 POWER SW-1
Q402 2SA773 POWE SW-2
D414 1SS119 POWER-1,2
PROJECTOR
D401 RD15ES-T1B2 +15V ZENER
IC403-405 HD14053BP REMOTE SW -2-4
D407-409 RD13ES-B2 PROTECT -4-6
D410-412 RD13ES-B2 PROTECT-7-9
S401 INPUT SELECT
RGB 2
RGB 1
VIDEO IN (LINE)
COLOR
SHARPNESS
HUE
W/B
S406 HATCH
S405 ME
S404 B
S403 G
S402 R
TO GB BOARD
TO QA BOARD (QA-6)
TO BB BOARD (BB-12)
TO BA BOARD (BA-7)
TO BB BOARD (BB-14)
TO QA BOARD (QA-5)


K (AUDIO OUT)
TO QA BOARD (QA-8)
IC1 μPC4558C DC SHIFT
D3 1SS119
IC2 M5222L DC CONT
Q3 2SC2785 AUDIO BUFF
Q4 2SA1175 DC SHIFT
IC3 μPC1241H AUDIO OUT
Q5 2SA1175 FAN DRIVE 1
Q6 2SB734 FAN DRIVE 2
D2 1SS119 STOPPER
MAX LEVEL ADJ
BOOT-STRAP
Q1 2SC2785 VOL BUFF
D1 RD5.1EL ZENER
Q2 2SC2785 DC CONT
SP1
SP2
FAN 2
FAN 1
TO GB BOARD (GB-9)

DB [PIN GEN, V OUT, KEYS GEN, KEYS PIN AMP, V.H SUB OUT, REMOTE SW]

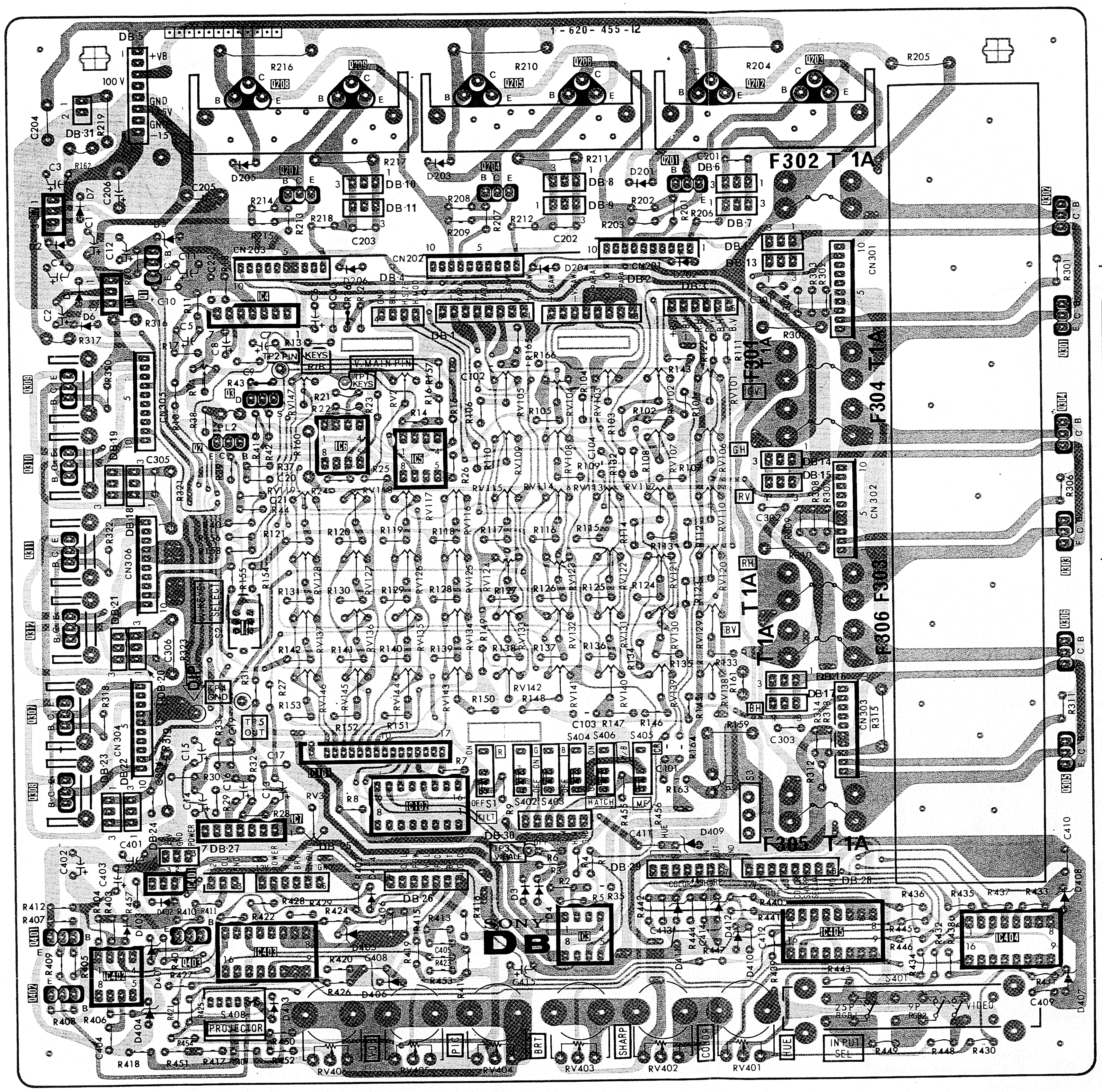
DC [V OUT] **DD** [SUB OUT DRIVE] **K** [AUDIO OUT] **X**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

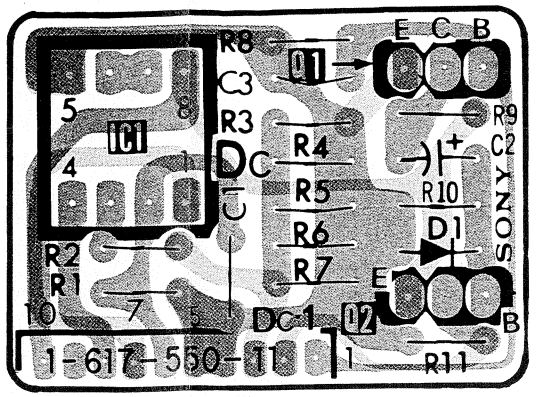
A B C D E F G H I J

– DB Board –

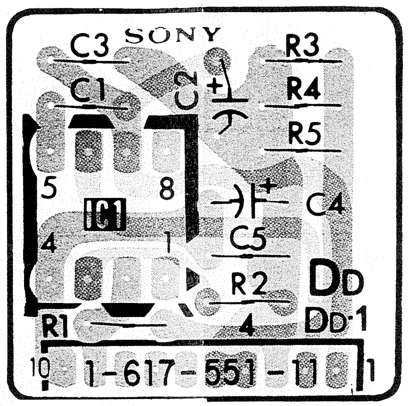
	Q IC	D	ADJ,TP
A			
B	209 206 208 205 202 203 207 204 201	205 203 201	
C	IC2 302 1 IC1 IC4	7 5 2 206 204 202 1 6	
D	301 309 3 2		TP2 TP1 RV1 RV147 RV2 RV105 RV101 RV102 RV103 RV104
E	IC6 304 310 IC5 303 311		RV109 RV108 RV106 RV107 RV119 RV118 RV117 RV116 RV115 RV110 RV112 RV113 RV114 RV128 RV127 RV126 RV125 RV124 RV120 RV121 RV122 RV123
F	312 306		RV137 RV136 RV135 RV134 RV133 RV129 RV130 RV131 RV132 RV146 RV145 RV144 RV143 RV142 RV138 RV139 RV140 R141
G	307 IC101 305 308		
H	IC102 IC7 IC401	409 3 4 402 414 408	RV3
I	403 401 IC405 IC3 IC403 IC404 IC402 402	411 412 403 401 405 410 407 406 413 404	
J			RV406,404,402 RV405,403,401
	Q IC	D	ADJ,TP


1-620-455-12
DB
SONY
F302 T 1A
F301 T 1A
F304 T 1A
F303 T 1A
F306 T 1A
F305 T 1A
V.MAIN PIN
KEYS
SELECT
RV403
RV402
RV401
RV404
RV405
RV406
BRT
SHARP
COLOR
HUE
INPUT SEL
PROJECTOR
VIDEO

– DC Board –

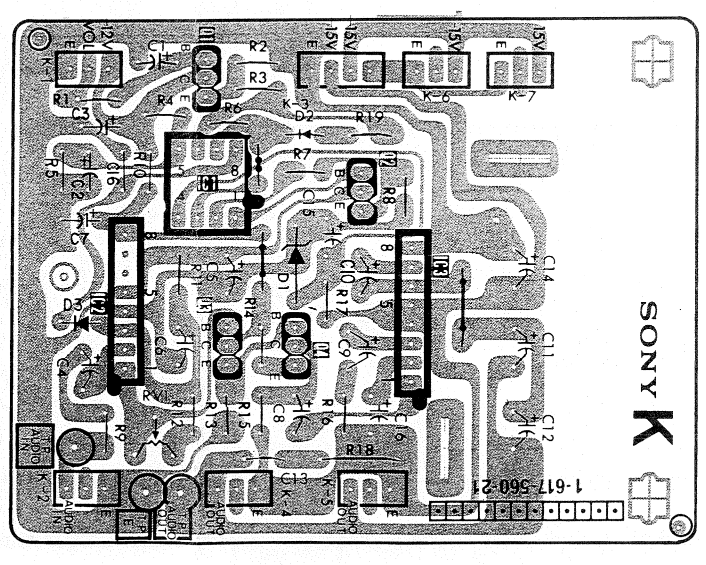

1-617-550-11
DC
SONY
IC1
Q1
Q2
D1
E C B

– DD Board –

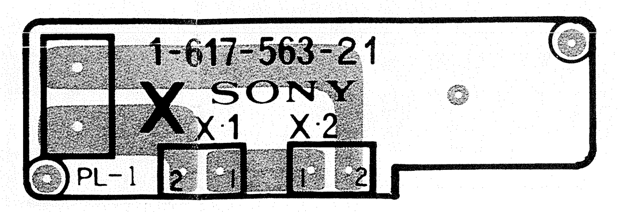

1-617-551-11
SONY
DD
DD·1
IC1

- ▨ : Conductor side pattern
- ▨ : Component side pattern

– K Board –


1-617-560-21
SONY
K

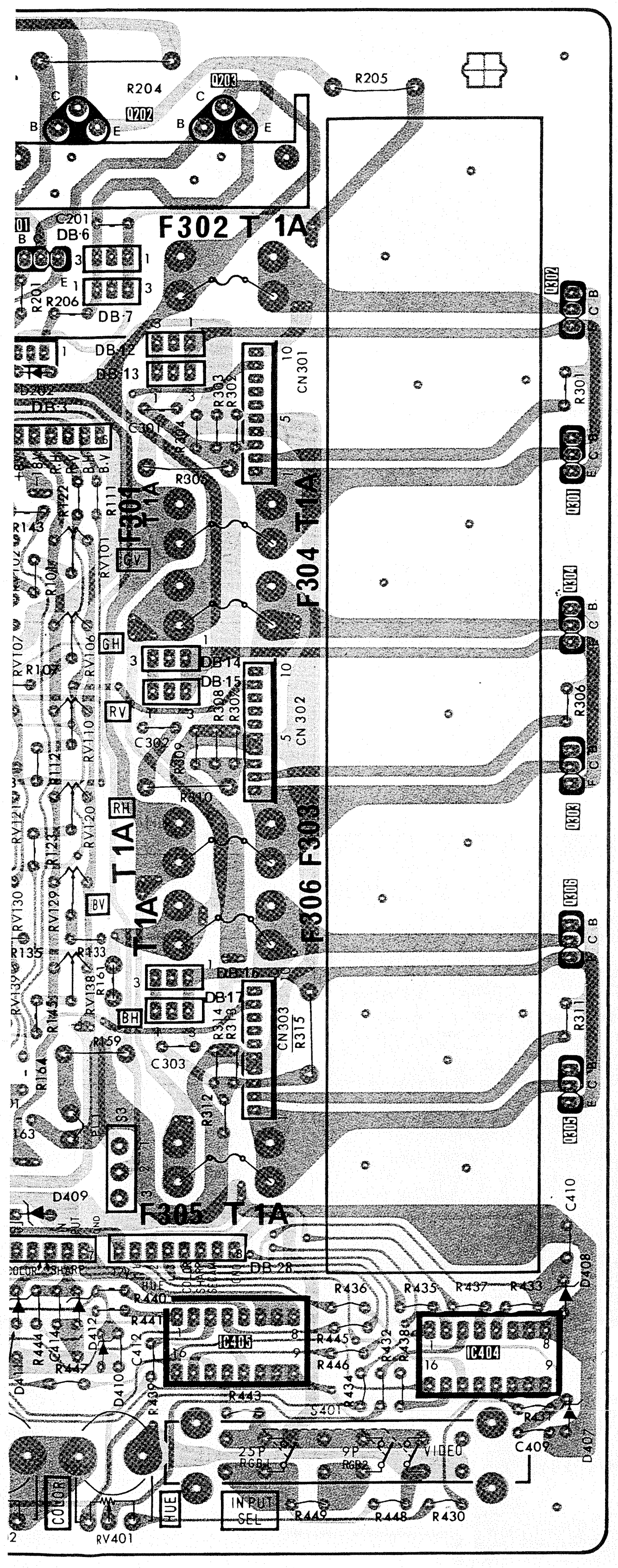
– X Board –


1-617-563-21
X
SONY
X·1
X·2
PL-1

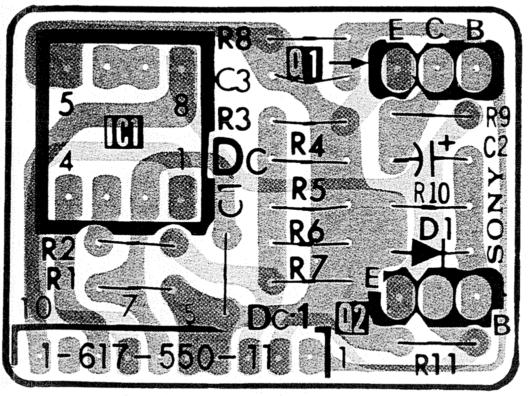
①
①
②
②
③
③
④

DC [V OUT] **DD** [SUB OUT DRIVE] **K** [AUDIO OUT] **X**

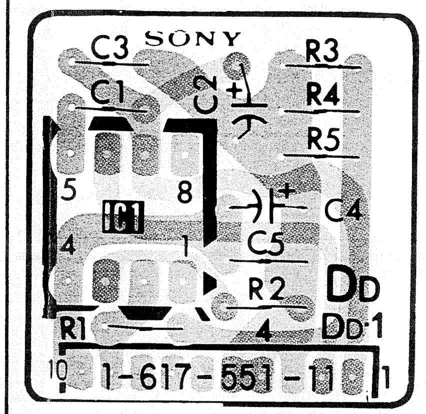
8 | 9 | 10 | 11 | 12 | 13 | 14 | 15


R204
Q203
Q202
R205
F302 T 1A
C201
DB6
R206
DB7
DB12
DB13
CN301
R301
R306
F304 T1A
F301 T1A
GH
RV
DB14
DB15
CN302
C302
R306
RH
BV
T 1A
F306
F303
BH
DB17
CN303
R311
R312
C303
D409
F305 T 1A
DB28
C410
R436
R435
R437
R433
IC405
IC404
R441
R446
R443
S401
25P RGB1
9P RGB2
VIDEO
C409
D407
D408
D410
COLOR
HUE
INPUT SEL
R449
R448
R430
RV401

– DC Board –

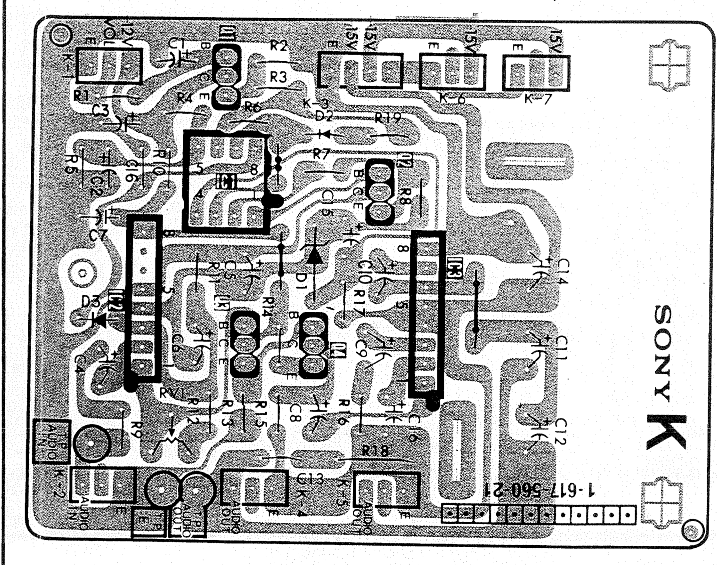

R8
Q1
E C B
C3
IC1
R3
DC
R4
R9
C2
R5
R10
SONY
R6
D1
R2
R1
R7
E
10
DC-1
Q2
B
1-617-550-11
1
R11

– DD Board –

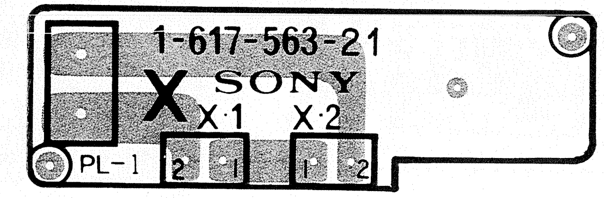

C3
SONY
R3
C1
C2
R4
R5
5
8
C4
IC1
C5
4
1
R2
DD
R1
4
DD-1
10
1-617-551-11
1

- ▨: Conductor side pattern
- ▨: Component side pattern

– K Board –

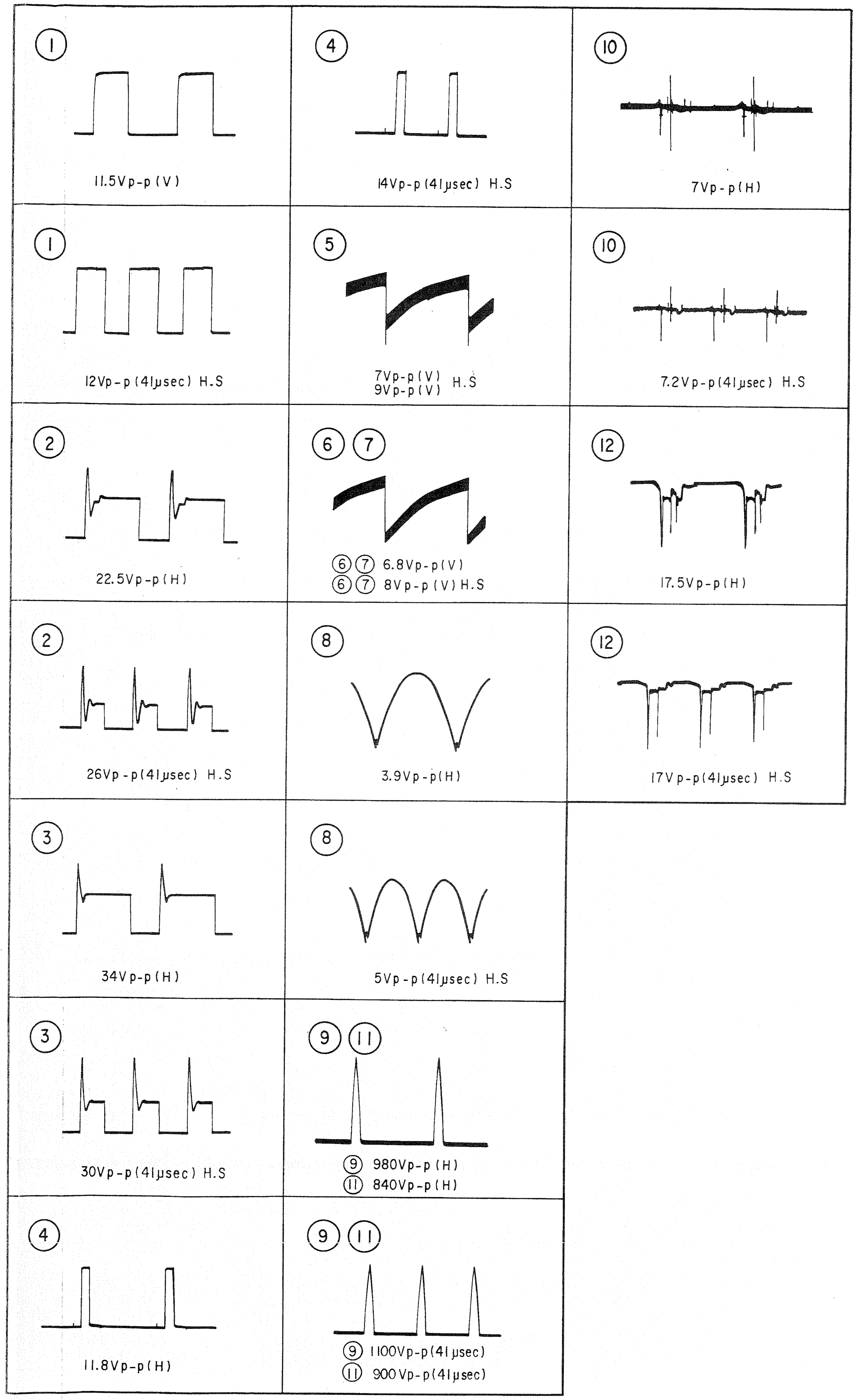

12V
15V
15V
15V
R2
R3
K-3
D2
R19
K-6
K-7
R4
IC1
R7
R6
R8
D3
D1
C14
R14
C10
R17
C11
R15
C12
R16
C8
R18
C13
K-5
SONY
K
1-617-560-21

– X Board –

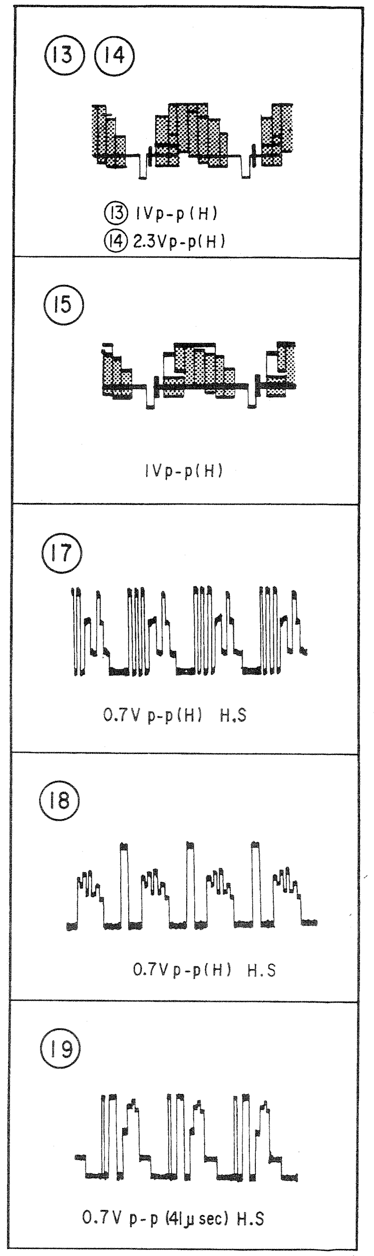

1-617-563-21
SONY
X
X-1
X-2
PL-1
2
1
1
2

7-7. WAVEFORMS

EA board



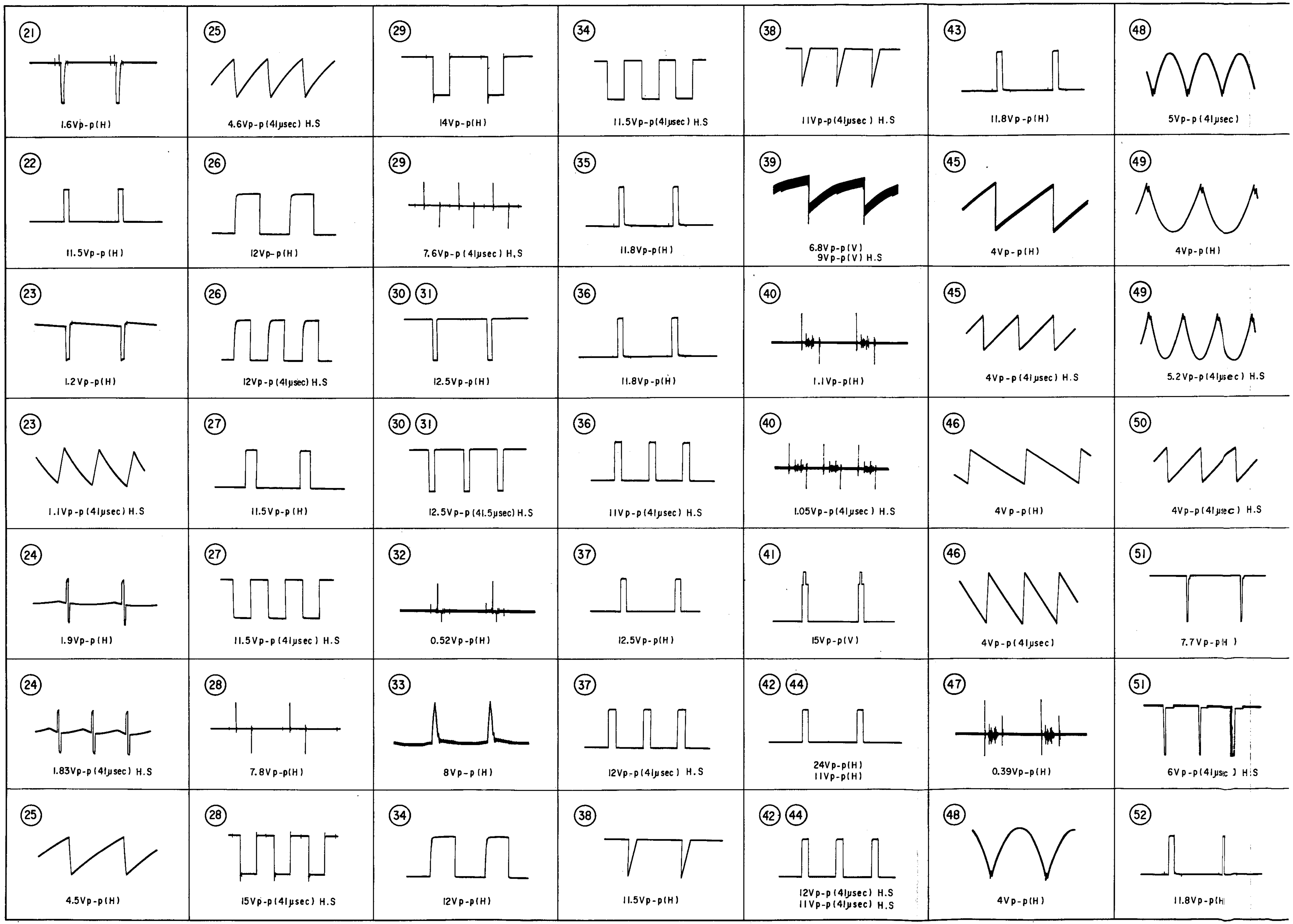
QA board

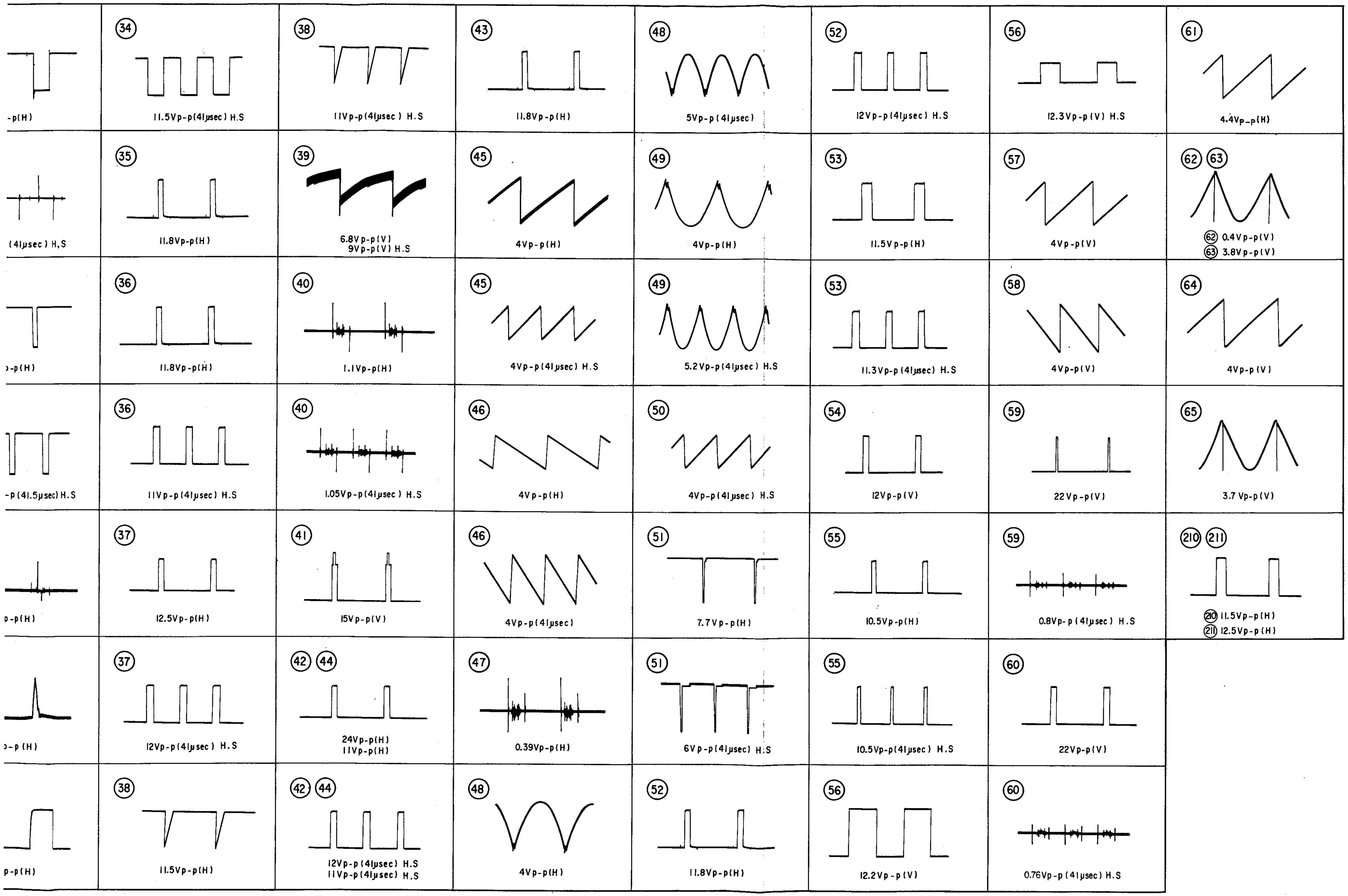


QA

EA

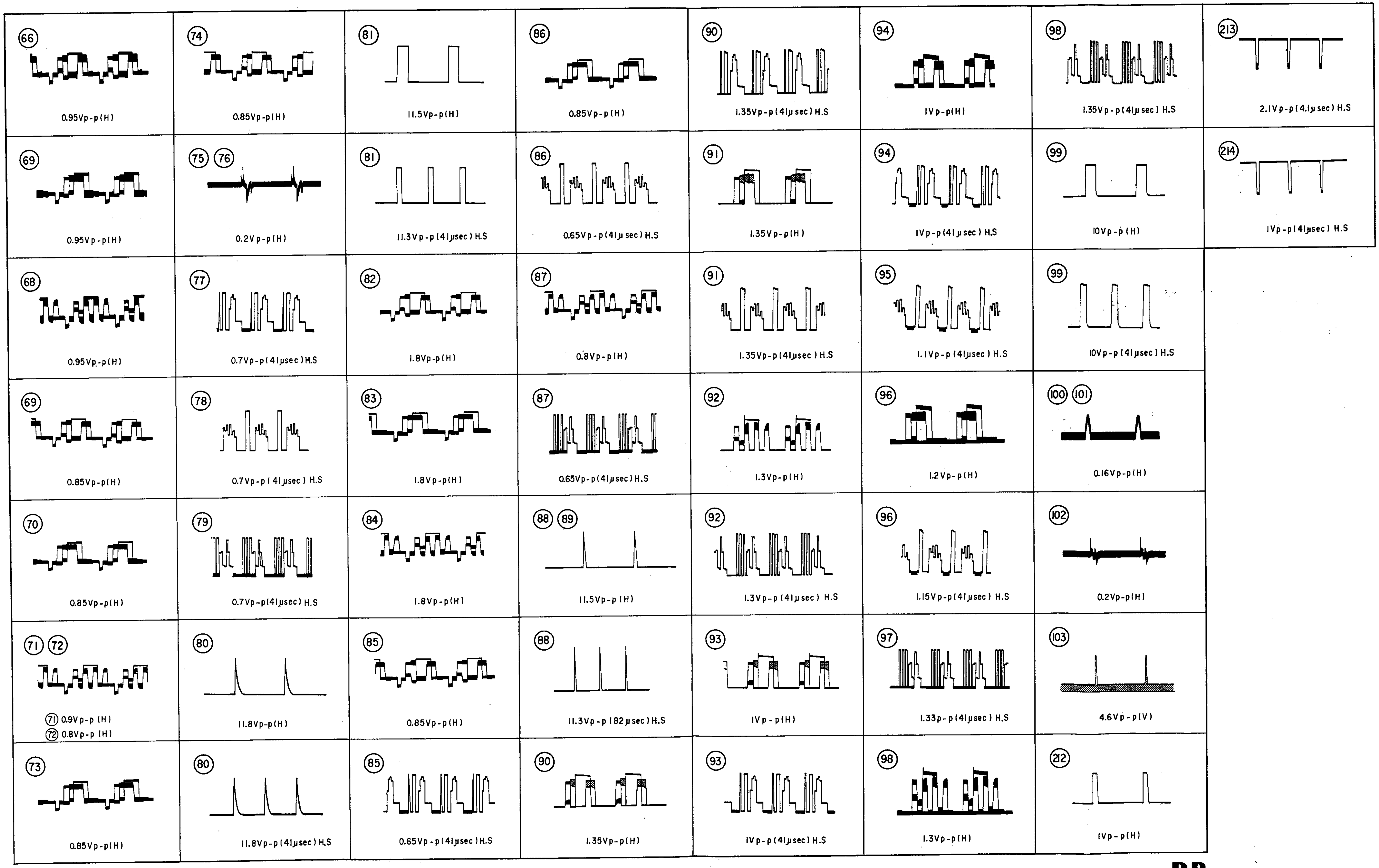
DA board

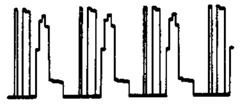
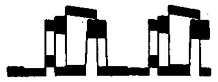
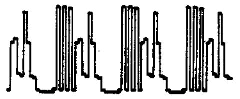
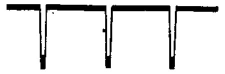
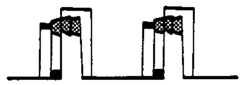
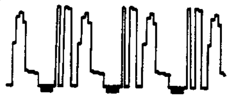
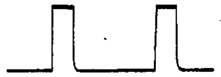
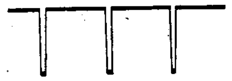
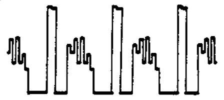
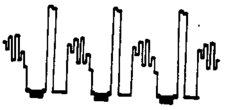
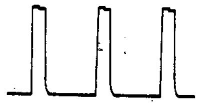
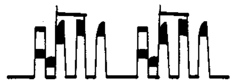
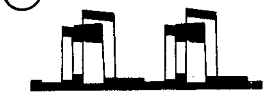
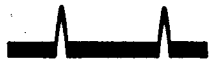
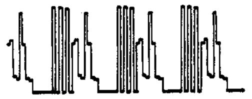
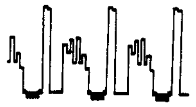
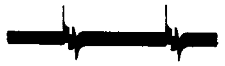
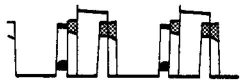
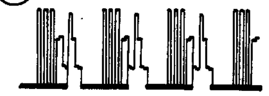
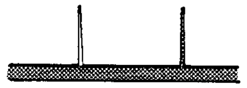
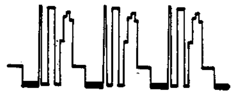
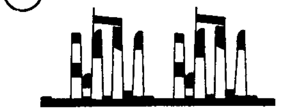
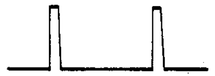

㉑
1.6Vp-p(H)
㉒
11.5Vp-p(H)
㉓
1.2Vp-p(H)
㉓
1.1Vp-p(41μsec) H.S
㉔
1.9Vp-p(H)
㉔
1.83Vp-p(41μsec) H.S
㉕
4.5Vp-p(H)
㉕
4.6Vp-p(41μsec) H.S
㉖
12Vp-p(H)
㉖
12Vp-p(41μsec) H.S
㉗
11.5Vp-p(H)
㉗
11.5Vp-p(41μsec) H.S
㉘
7.8Vp-p(H)
㉘
15Vp-p(41μsec) H.S
㉙
14Vp-p(H)
㉙
7.6Vp-p(41μsec) H.S
㉚ ㉛
12.5Vp-p(H)
㉚ ㉛
12.5Vp-p(41.5μsec) H.S
㉜
0.52Vp-p(H)
㉝
8Vp-p(H)
㉞
12Vp-p(H)
㉞
11.5Vp-p(41μsec) H.S
㉟
11.8Vp-p(H)
㊱
11.8Vp-p(H)
㊱
11Vp-p(41μsec) H.S
㊲
12.5Vp-p(H)
㊲
12Vp-p(41μsec) H.S
㊳
11.5Vp-p(H)
㊳
11Vp-p(41μsec) H.S
㊴
6.8Vp-p(V)
9Vp-p(V) H.S
㊵
1.1Vp-p(H)
㊵
1.05Vp-p(41μsec) H.S
㊶
15Vp-p(V)
㊷ ㊹
24Vp-p(H)
11Vp-p(H)
㊷ ㊹
12Vp-p(41μsec) H.S
11Vp-p(41μsec) H.S
㊸
11.8Vp-p(H)
㊺
4Vp-p(H)
㊺
4Vp-p(41μsec) H.S
㊻
4Vp-p(H)
㊻
4Vp-p(41μsec)
㊼
0.39Vp-p(H)
㊽
4Vp-p(H)
㊽
5Vp-p(41μsec)
㊾
4Vp-p(H)
㊾
5.2Vp-p(41μsec) H.S
㊿
4Vp-p(41μsec) H.S
(51)
7.7Vp-p(H)
(51)
6Vp-p(41μsec) H.S
(52)
11.8Vp-p(H


-p(H)
(4lμsec) H,S
›-p(H)
-p(41.5μsec) H.S
ɒ-p(H)
ɔ-p(H)
p-p(H)
㉞
11.5Vp-p(4lμsec) H.S
㉟
11.8Vp-p(H)
㊱
11.8Vp-p(H)
㊱
11Vp-p(4lμsec) H.S
㊲
12.5Vp-p(H)
㊲
12Vp-p(4lμsec) H.S
㊳
11.5Vp-p(H)
㊳
11Vp-p(4lμsec) H.S
㊴
6.8Vp-p(V)
9Vp-p(V) H.S
㊵
1.1Vp-p(H)
㊵
1.05Vp-p(4lμsec) H.S
㊶
15Vp-p(V)
㊷ ㊹
24Vp-p(H)
11Vp-p(H)
㊷ ㊹
12Vp-p(4lμsec) H.S
11Vp-p(4lμsec) H.S
㊸
11.8Vp-p(H)
㊺
4Vp-p(H)
㊺
4Vp-p(4lμsec) H.S
㊻
4Vp-p(H)
㊻
4Vp-p(4lμsec)
㊼
0.39Vp-p(H)
㊽
4Vp-p(H)
㊽
5Vp-p(4lμsec)
㊾
4Vp-p(H)
㊾
5.2Vp-p(4lμsec) H.S
㊿
4Vp-p(4lμsec) H.S
(51)
7.7Vp-p(H)
(51)
6Vp-p(4lμsec) H.S
(52)
11.8Vp-p(H)
(52)
12Vp-p(4lμsec) H.S
(53)
11.5Vp-p(H)
(53)
11.3Vp-p(4lμsec) H.S
(54)
12Vp-p(V)
(55)
10.5Vp-p(H)
(55)
10.5Vp-p(4lμsec) H.S
(56)
12.2Vp-p(V)
(56)
12.3Vp-p(V) H.S
(57)
4Vp-p(V)
(58)
4Vp-p(V)
(59)
22Vp-p(V)
(59)
0.8Vp-p(4lμsec) H.S
(60)
22Vp-p(V)
(60)
0.76Vp-p(4lμsec) H.S
(61)
4.4Vp-p(H)
(62) (63)
(62) 0.4Vp-p(V)
(63) 3.8Vp-p(V)
(64)
4Vp-p(V)
(65)
3.7Vp-p(V)
(210) (211)
(210) 11.5Vp-p(H)
(211) 12.5Vp-p(H)

DA

BB board

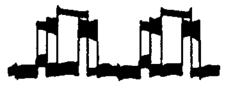

(66) 0.95Vp-p(H)
(74) 0.85Vp-p(H)
(81) 11.5Vp-p(H)
(86) 0.85Vp-p(H)
(90) 1.35Vp-p(41μsec) H.S
(94) 1Vp-p(H)
(98) 1.35Vp-p(41μsec) H.S
(213) 2.1Vp-p(4.1μsec) H.S
(69) 0.95Vp-p(H)
(75) (76) 0.2Vp-p(H)
(81) 11.3Vp-p(41μsec) H.S
(86) 0.65Vp-p(41μsec) H.S
(91) 1.35Vp-p(H)
(94) 1Vp-p(41μsec) H.S
(99) 10Vp-p(H)
(214) 1Vp-p(41μsec) H.S
(68) 0.95Vp-p(H)
(77) 0.7Vp-p(41μsec) H.S
(82) 1.8Vp-p(H)
(87) 0.8Vp-p(H)
(91) 1.35Vp-p(41μsec) H.S
(95) 1.1Vp-p(41μsec) H.S
(99) 10Vp-p(41μsec) H.S
(69) 0.85Vp-p(H)
(78) 0.7Vp-p(41μsec) H.S
(83) 1.8Vp-p(H)
(87) 0.65Vp-p(41μsec) H.S
(92) 1.3Vp-p(H)
(96) 1.2Vp-p(H)
(100) (101) 0.16Vp-p(H)
(70) 0.85Vp-p(H)
(79) 0.7Vp-p(41μsec) H.S
(84) 1.8Vp-p(H)
(88) (89) 11.5Vp-p(H)
(92) 1.3Vp-p(41μsec) H.S
(96) 1.15Vp-p(41μsec) H.S
(102) 0.2Vp-p(H)
(71) (72)
(71) 0.9Vp-p(H)
(72) 0.8Vp-p(H)
(80) 11.8Vp-p(H)
(85) 0.85Vp-p(H)
(88) 11.3Vp-p(82μsec) H.S
(93) 1Vp-p(H)
(97) 1.33p-p(41μsec) H.S
(103) 4.6Vp-p(V)
(73) 0.85Vp-p(H)
(80) 11.8Vp-p(41μsec) H.S
(85) 0.65Vp-p(41μsec) H.S
(90) 1.35Vp-p(H)
(93) 1Vp-p(41μsec) H.S
(98) 1.3Vp-p(H)
(212) 1Vp-p(H)

⑨⓪  1.35Vp-p(41μsec) H.S	⑨④  1Vp-p(H)	⑨⑧  1.35Vp-p(41μsec) H.S	(213)  2.1Vp-p(4.1μsec) H.S
⑨①  1.35Vp-p(H)	⑨④  1Vp-p(41μsec) H.S	⑨⑨  10Vp-p(H)	(214)  1Vp-p(41μsec) H.S
⑨①  1.35Vp-p(41μsec) H.S	⑨⑤  1.1Vp-p(41μsec) H.S	⑨⑨  10Vp-p(41μsec) H.S	
⑨②  1.3Vp-p(H)	⑨⑥  1.2Vp-p(H)	(100) (101)  0.16Vp-p(H)	
⑨②  1.3Vp-p(41μsec) H.S	⑨⑥  1.15Vp-p(41μsec) H.S	(102)  0.2Vp-p(H)	
⑨③  1Vp-p(H)	⑨⑦  1.33p-p(41μsec) H.S	(103)  4.6Vp-p(V)	
⑨③  1Vp-p(41μsec) H.S	⑨⑧  1.3Vp-p(H)	(212)  1Vp-p(H)	

BB

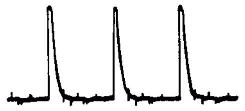
CA, CB board

(104)



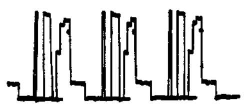
1Vp-p(H)(R BOARD)

(105)



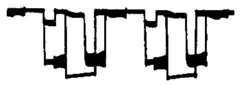
11Vp-p(41μsec)(R BOARD) H.S

(104)



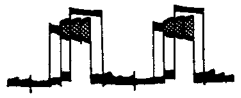
1Vp-p(41μsec)(R BOARD)

(106)



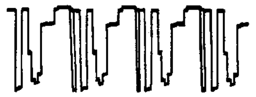
75Vp-p(H)(R BOARD)

(226)



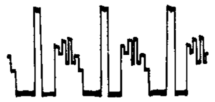
1.2Vp-p(H)(G BOARD)

(106)



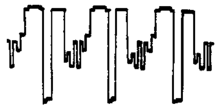
78Vp-p(41μsec)(R BOARD) H.S

(104)



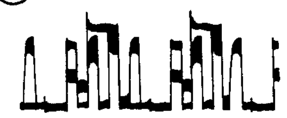
1.15Vp-p(41μsec)(G BOARD)

(106)



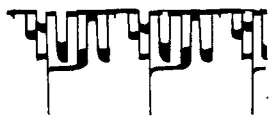
90Vp-p(41μsec)(G BOARD) H.S

(228)



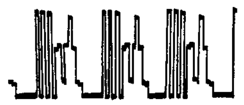
1.25Vp-p(H)(B BOARD)

(227)



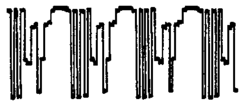
95Vp-p(H)(B BOARD)

(104)



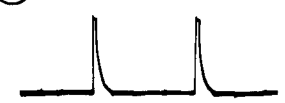
1.35Vp-p(41μsec)(B BOARD) H.S

(106)



95Vp-p(41μsec)(B BOARD) H.S

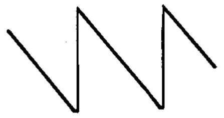
(105)



10.2Vp-p(H)(R·G·B BOARD)

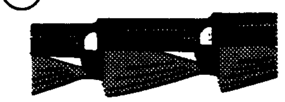
DB board

(107) (112) (117)



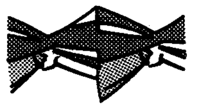
1.1Vp-p(V)

(125)



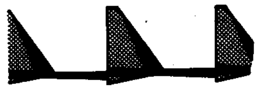
4.4Vp-p(V)
5.2Vp-p(V)

(131)



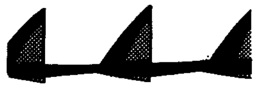
17.5Vp-p(V)

(137)



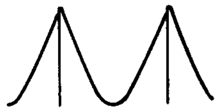
4.6Vp-p(V)

(145)



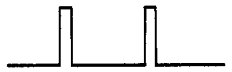
4.6Vp-p(V)

(217)



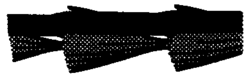
3.8Vp-p(V)

(108) (113) (118)



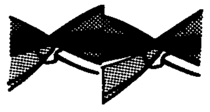
15.2Vp-p(V)

(126)



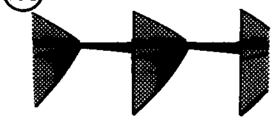
5.2Vp-p(V)
5.6Vp-p(V)

(132)



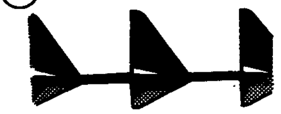
17.5Vp-p(V)
20Vp-p(V) H.S

(138)



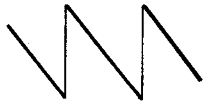
6Vp-p(V)

(146)



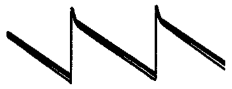
6Vp-p(V)

(218)



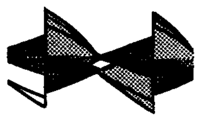
4Vp-p(V)

(109) (114) (119)



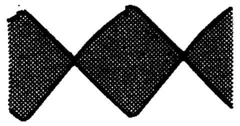
1.5Vp-p(V)

(127)



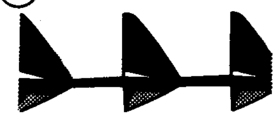
8Vp-p(V)

(133)



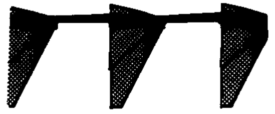
8.6Vp-p(V)

(139)



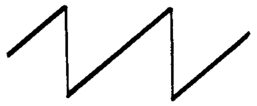
6Vp-p(V)

(147)



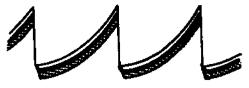
5.2Vp-p(V)

(219)



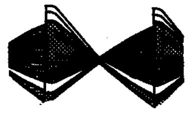
4Vp-p(H)

(110) (115) (120)



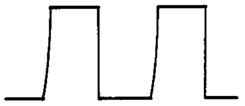
2.25Vp-p(V)

(128)



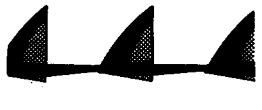
6.4Vp-p(V)
11.5Vp-p(V) H.S

(134)



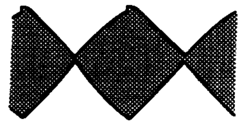
14Vp-p(H)

(140)



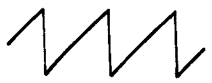
4.8p-p(V)

(148)



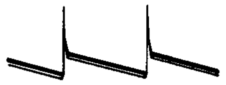
8.6Vp-p(V)

(219)



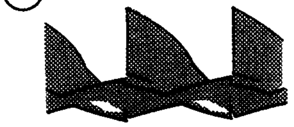
4Vp-p(41μsec) H.S

(111) (116) (229)



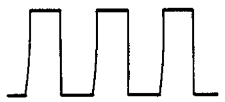
45Vp-p(V)

(129)



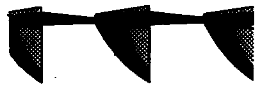
18Vp-p(V)

(134)



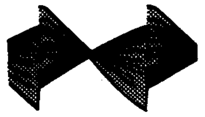
14.5Vp-p(41μsec) H.S

(141)



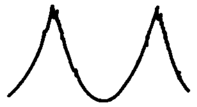
4.8Vp-p(V)

(149)



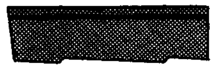
0.72Vp-p(V)

(220)



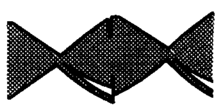
4Vp-p(H)

(121) (122)



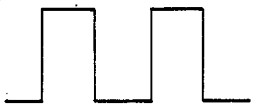
(121) 3.6Vp-p(V)
(121) 3.8Vp-p(V)
(122) 3.8Vp-p(V)
(122) 3.6Vp-p(V)

(230)



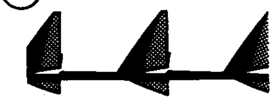
0.55Vp-p(V)

(135)



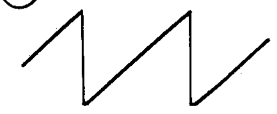
14.3Vp-p(V)

(142)



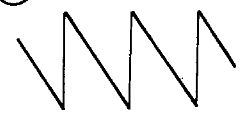
5.1Vp-p(V)

(215)



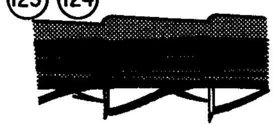
4Vp-p(V)

(220)



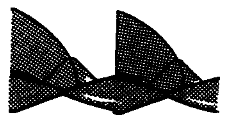
4Vp-p(41μsec) H.S

(123) (124)



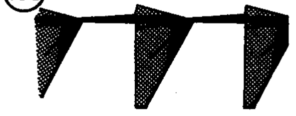
(123) 2Vp-p(V)
(123) 4.8Vp-p(V)
(124) 4Vp-p(V)
(124) 4.5Vp-p(V)

(130)



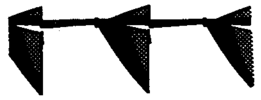
16.5Vp-p(V)
19Vp-p(V) H.S

(136)



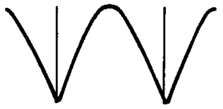
4.7Vp-p(V)

(143) (144)



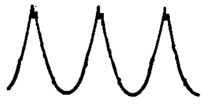
(143) 5Vp-p(V)
(144) 5.4p-p(V)

(216)

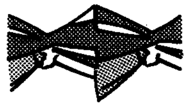
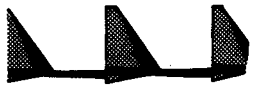
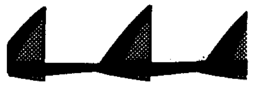
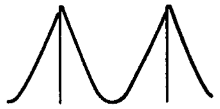
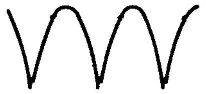
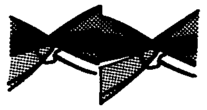
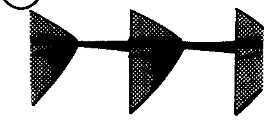
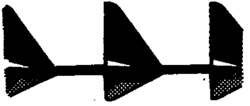
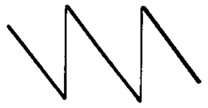
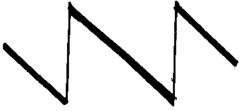
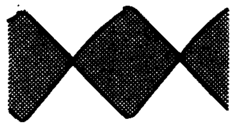
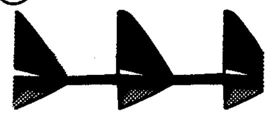
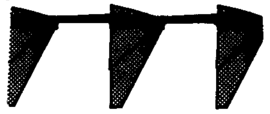
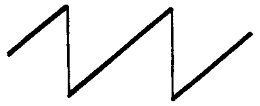
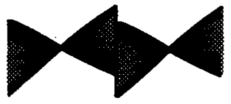
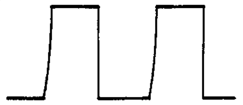
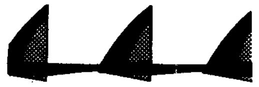
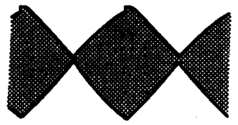
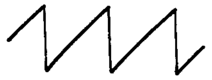
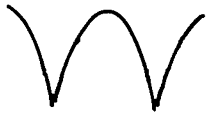
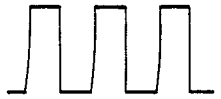
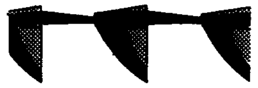
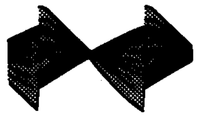
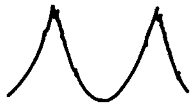
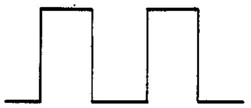
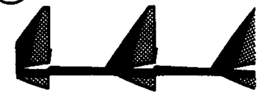
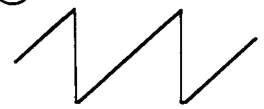
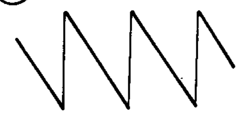
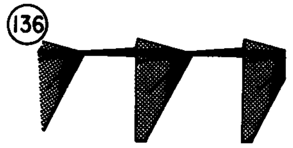
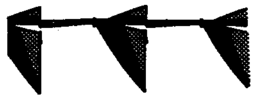
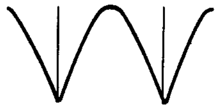
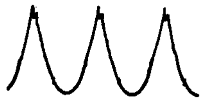


3.7Vp-p(V)

(221)

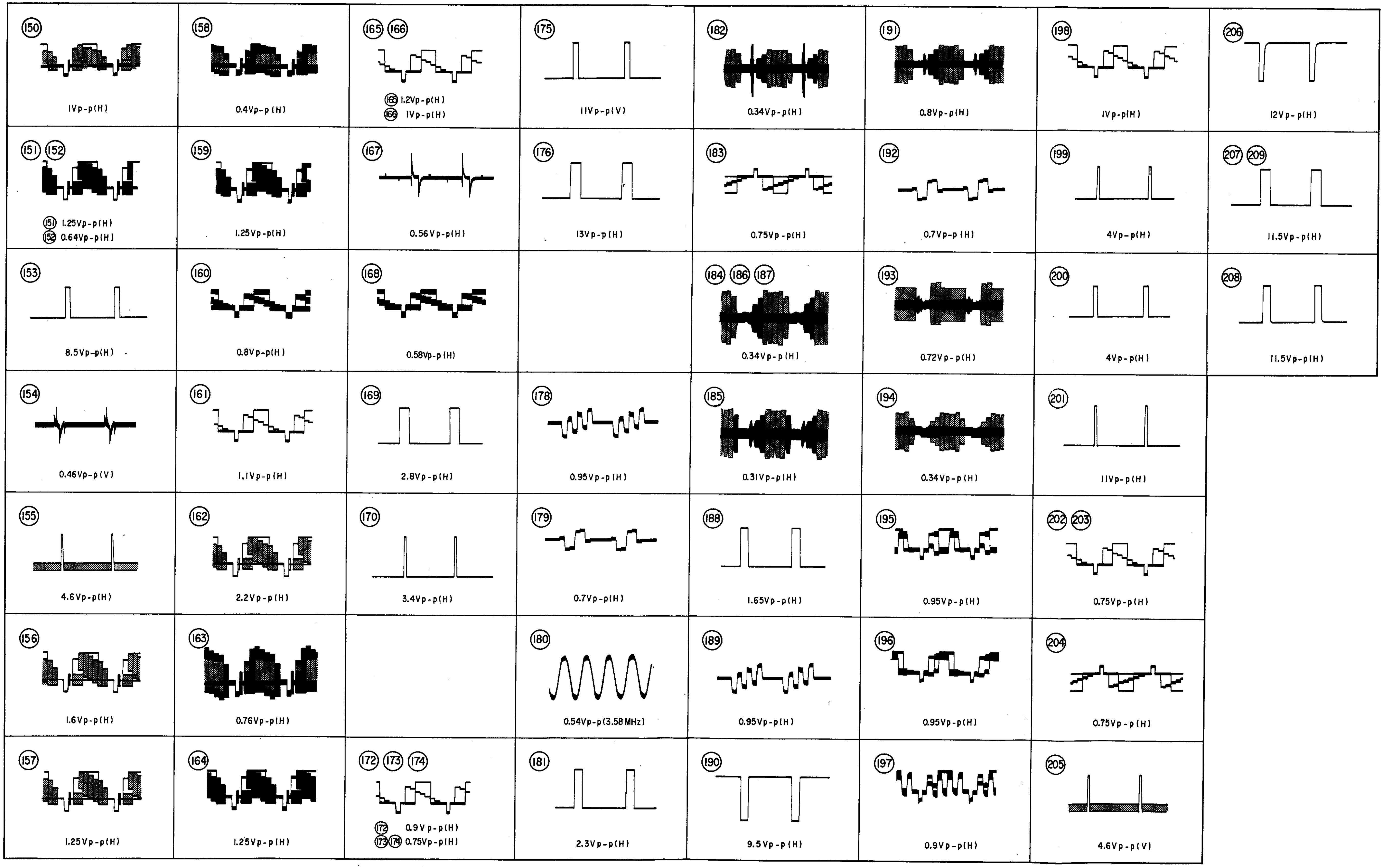


5.2Vp-p(41μsec) H.S

(131)  17.5Vp-p(V)	(137)  4.6Vp-p(V)	(145)  4.6Vp-p(V)	(217)  3.8Vp-p(V)	(222)  5.2Vp-p(41µsec)
(132)  17.5Vp-p(V) 20Vp-p(V) H.S	(138)  6Vp-p(V)	(146)  6Vp-p(V)	(218)  4Vp-p(V)	(223)  4Vp-p(H)
(133)  8.6Vp-p(V)	(139)  6Vp-p(V)	(147)  5.2Vp-p(V)	(219)  4Vp-p(H)	(224)  5.4Vp-p(V)
(134)  14Vp-p(H)	(140)  4.8p-p(V)	(148)  8.6Vp-p(V)	(219)  4Vp-p(41µsec) H.S	(225)  4Vp-p(H)
(134)  14.5Vp-p(41µsec) H.S	(141)  4.8Vp-p(V)	(149)  0.72Vp-p(V)	(220)  4Vp-p(H)	
(135)  14.3Vp-p(V)	(142)  5.1Vp-p(V)	(215)  4Vp-p(V)	(220)  4Vp-p(41µsec) H.S	
(136)  4.7Vp-p(V)	(143) (144)  (143) 5Vp-p(V) (144) 5.4p-p(V)	(216)  3.7Vp-p(V)	(221)  5.2Vp-p(41µsec) H.S	

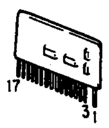
DB

BA Board

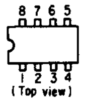

(150)
1Vp-p(H)
(151) (152)
(151) 1.25Vp-p(H)
(152) 0.64Vp-p(H)
(153)
8.5Vp-p(H)
(154)
0.46Vp-p(V)
(155)
4.6Vp-p(H)
(156)
1.6Vp-p(H)
(157)
1.25Vp-p(H)
(158)
0.4Vp-p(H)
(159)
1.25Vp-p(H)
(160)
0.8Vp-p(H)
(161)
1.1Vp-p(H)
(162)
2.2Vp-p(H)
(163)
0.76Vp-p(H)
(164)
1.25Vp-p(H)
(165) (166)
(165) 1.2Vp-p(H)
(166) 1Vp-p(H)
(167)
0.56Vp-p(H)
(168)
0.58Vp-p(H)
(169)
2.8Vp-p(H)
(170)
3.4Vp-p(H)
(172) (173) (174)
(172) 0.9Vp-p(H)
(173)(174) 0.75Vp-p(H)
(175)
11Vp-p(V)
(176)
13Vp-p(H)
(178)
0.95Vp-p(H)
(179)
0.7Vp-p(H)
(180)
0.54Vp-p(3.58MHz)
(181)
2.3Vp-p(H)
(182)
0.34Vp-p(H)
(183)
0.75Vp-p(H)
(184) (186) (187)
0.34Vp-p(H)
(185)
0.31Vp-p(H)
(188)
1.65Vp-p(H)
(189)
0.95Vp-p(H)
(190)
9.5Vp-p(H)
(191)
0.8Vp-p(H)
(192)
0.7Vp-p(H)
(193)
0.72Vp-p(H)
(194)
0.34Vp-p(H)
(195)
0.95Vp-p(H)
(196)
0.95Vp-p(H)
(197)
0.9Vp-p(H)
(198)
1Vp-p(H)
(199)
4Vp-p(H)
(200)
4Vp-p(H)
(201)
11Vp-p(H)
(202) (203)
0.75Vp-p(H)
(204)
0.75Vp-p(H)
(205)
4.6Vp-p(V)
(206)
12Vp-p(H)
(207) (209)
11.5Vp-p(H)
(208)
11.5Vp-p(H)

7-8. SEMICONDUCTORS

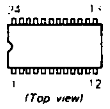
BX-1358



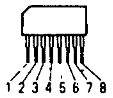
CX-7916
HA17558
LM318P
NJM555D
NJM2903D
NJM4558D
TL082CP
µPC311C
µPC318C
µPC393C
µPC814C
µPC1555C
µPC4082C
µPC4558C


8 7 6 5
1 2 3 4
(Top view)

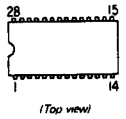
CX-867


24
13
1
12
(Top view)

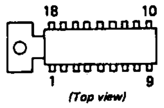
CX-7948
CX20125
M5222L



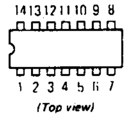
CX20100
CX22030
µPC1364C2
µPC1365C


28
15
1
14
(Top view)

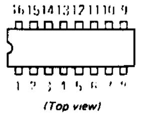
CXA1044P


18
10
1
9
(Top view)

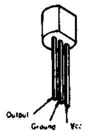
HD74LS00P	**SN74LS05N**
HD74LS05P	**SN74LS06N**
HD74LS09P	**SN74LS09N**
HD14001BP	**SN74LS136N**
HD14011BP	**TC4001BP**
HD14024BP	**TC4011BP**
HD14046BP	**TC4024BP**
HD14066BP	**TC4066BP**
MB4204	**µPC339C**
MC14046BP	**µPD4001BC**
MC1496P	**µPD4011BC**
SN74LS00N	**µPD4024BC**
	µPD4066BC


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

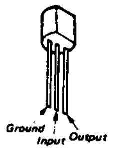
HD14052BP
HD14053BP
HD14538BP
MB84053B
MC14053BCP
MC14538BCP
TC4053BP
TC4538BP
µPD4053BC


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

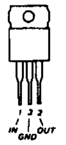
NJM78L05A
NJM78L09A
NJM78L12
NJM78L12A
NJM78M08A
TA78L005AP


Output
Ground
Vcc

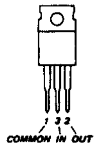
NJM79L12A


Ground
Input
Output

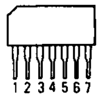
NJM78M05A
µPC78M05H
µPC78M08H
NJM78M12A
µPC78M12H


1 3 2
IN
GND
OUT

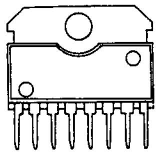
NJM79M08A
NJM79M12A


1 3 2
COMMON
IN
OUT

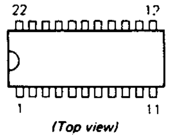
µPC1037HA



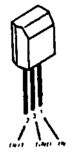
µPC1241H



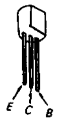
µPC1377C


22
12
1
11
(Top view)

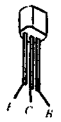
µPC78L05A
µPC78L12



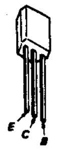
2SA733-Q
2SA844-C
2SA933S
2SA1005-L
2SC1740



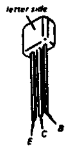
2SA781K
2SC2230
2SC2230A
2SC2383



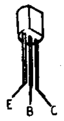
2SA1048
2SA1115
2SC2458
2SC2603
DTC144ES



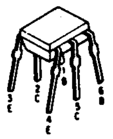
2SA1175
2SC2785


letter side
E
C
B

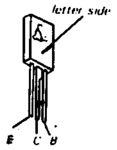
2SA1206



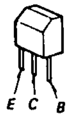
2SA1237
2SC3064


3
E
2
C
1
B
4
E
5
C
6
B

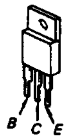
2SA1381
2SB649A
2SC2688
2SC3503
2SD669A


letter side
E
C
B

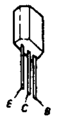
2SB734
2SC3209
2SD774



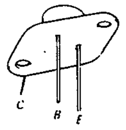
2SB856
2SB861
2SD1138
2SC1826
2SC3163
2SC3163S
2SD880



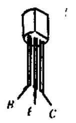
2SC403SP



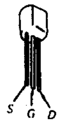
2SC1114
2SC1116
2SC1116A
2SD905



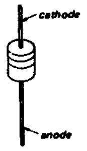
2SC2026-L
2SC2216
2SC2408
2SC2471



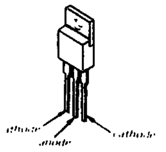
2SK105A-10



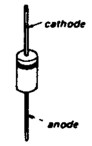
1SS119
1SS120
1SS133
1SS148


cathode
anode

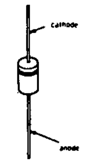
CTU-24S
S10SC4MR


anode
anode
cathode

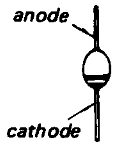
EQA01-05R	**RD5.1EL-1**
EQA01-06S	**RD5.1E-L2**
EQA01-10R	**RD5.1E-L3**
RD10EB-2	**RD5.6E-B2**
RD11E-N1	**RD6.2E-B2**
RD11E-N2	**RD6.8E-L1**
RD11E-N3	**RD6.8E-L2**
RD13E-L1	**RD6.8E-L3**
RD13E-L2	**RD8.2E-L1**
RD13E-N2	**RD8.2E-L2**
RD3.6E-L1	**RD8.2E-L3**
RD3.6E-L2	


cathode
anode

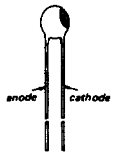
EQB01-33
RM2CS
RU-1A
RU-2M


cathode
anode

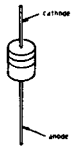
GH3F
V06C
V09C
V09G
V19E
V30N


anode
cathode

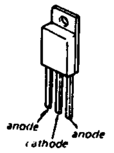
MV-11VS


anode
cathode

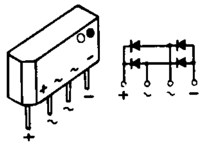
RD10ES-B1	**RD5.1ES-B1**
RD10ES-B2	**RD5.1ES-B2**
RD10ES-B3	**RD5.1ES-B3**
RD13ES-B2	**RD6.8ES-B1**
RD13ES-B3	**RD6.8ES-B2**
RD15ES-B1	**RD6.8ES-B3**
RD15ES-B2	**RD7.5ES-B1**
RD15ES-B3	**RD7.5ES-B2**
RD3.3ES-B1	**RD7.5ES-B3**
RD3.3ES-B2	


cathode
anode

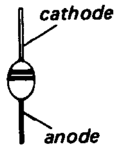
S10SC4M


anode
cathode
anode

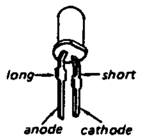
SIVB20
SIVB40



U05E
U05G


cathode
anode

SEL2110R
TLR124


long
short
anode
cathode

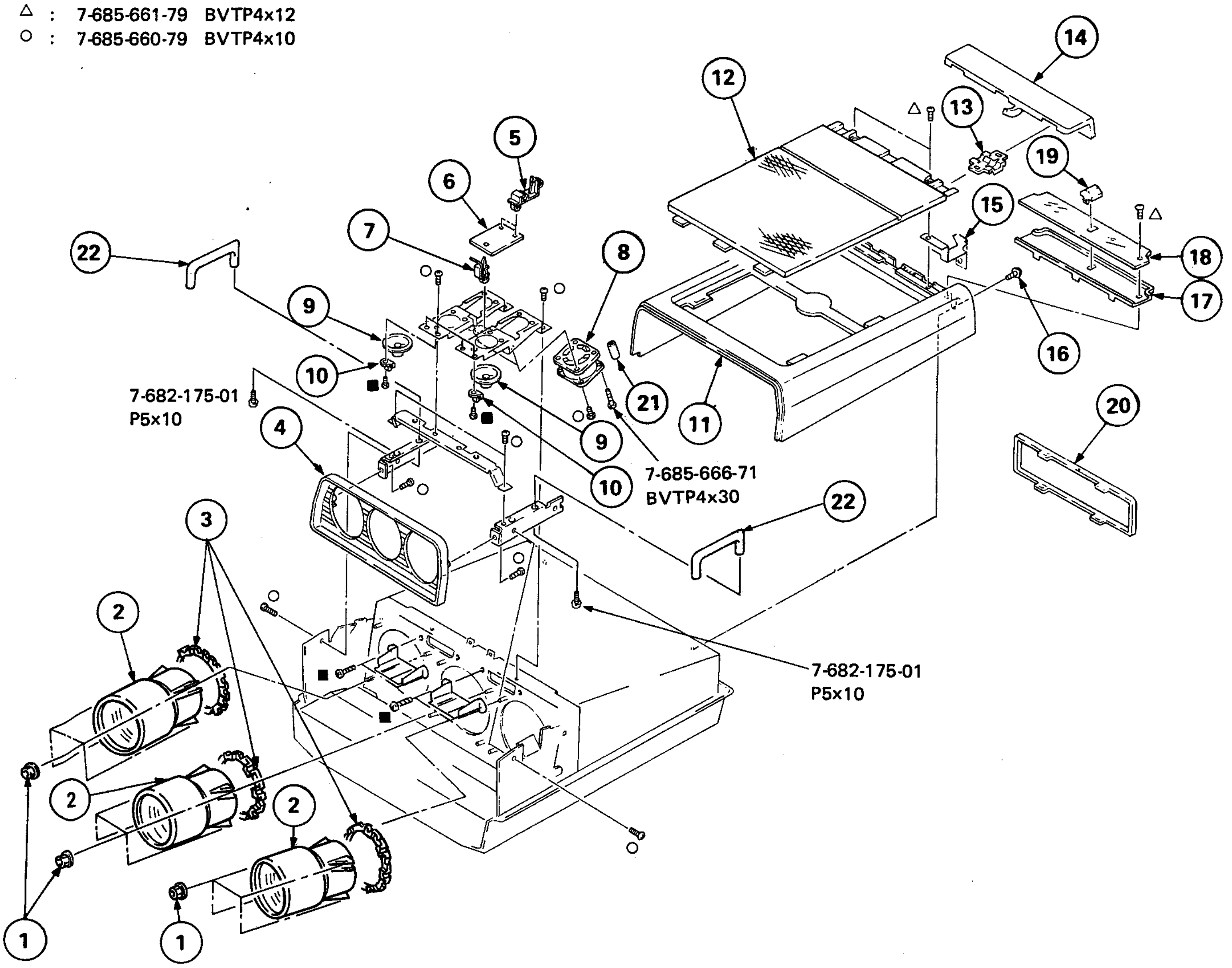
SECTION 8
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

8-1. LENS

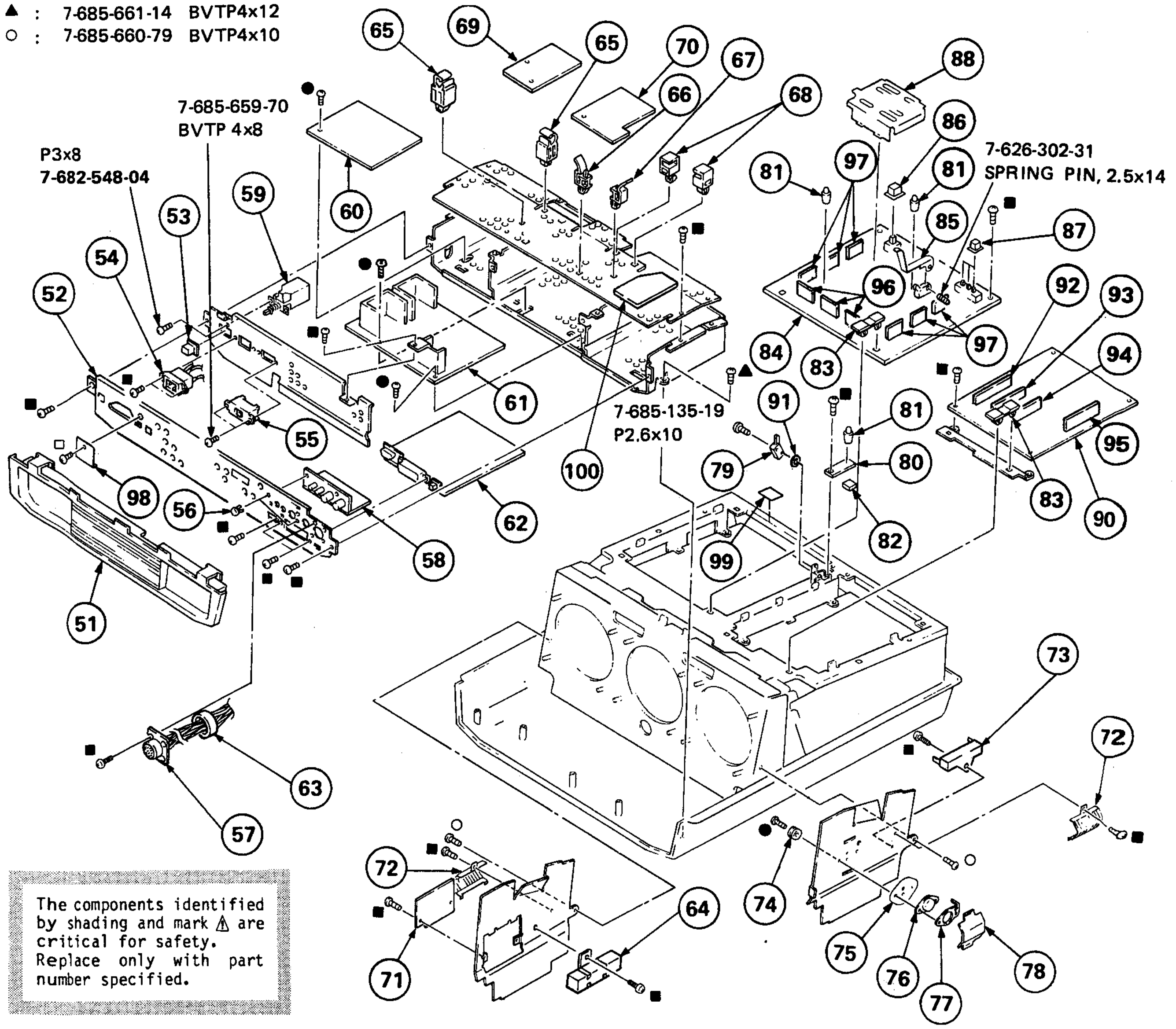
■ : 7-685-646-79 BVTP3x8
△ : 7-685-661-79 BVTP4x12
○ : 7-685-660-79 BVTP4x10



No.	Part No.	Description	Remark
1	4-304-749-00	NUT, FLANGE	
2	4-383-089-01	LENS, HD6	
3	*4-378-642-01	WASHER, LENS	
4	4-378-657-01	PANEL, LENS	
5	*3-682-612-00	CLIP (B), ANCHOR	
6	*1-617-560-21	K BOARD	
7	*3-703-141-00	HOLDER, PCB	
8	⚠1-541-324-11	FAN, DC	
9	1-503-344-21	SPEAKER	
10	*4-378-615-01	RETAINER, SPEAKER	
11	4-378-655-01	CABINET	
12	X-4378-606-1	PLATE ASSY, TOP	13,14
13	3-659-618-00	HINGE, SPRING	
14	X-4378-603-1	DOOR ASSY	
15	*4-378-670-01	BRACKET, MESH EARTH	
16	3-703-251-00	SCREW (+M4), IT TAPPING	
17	*4-378-648-01	PANEL, CONTROL	
18	4-378-646-02	PLATE, ORNAMENTAL, CONTROL	
19	4-378-613-01	CAP, LAMP	
20	4-378-650-01	PANEL, SONY	
21	*3-703-309-11	SPACER (5X16)	
22	*2-254-727-00	HANDLE	

8-2. DB BOARD

● : 7-685-648-79 BVTP3x12
■ : 7-685-646-79 BVTP3x8
▲ : 7-685-661-14 BVTP4x12
○ : 7-685-660-79 BVTP4x10

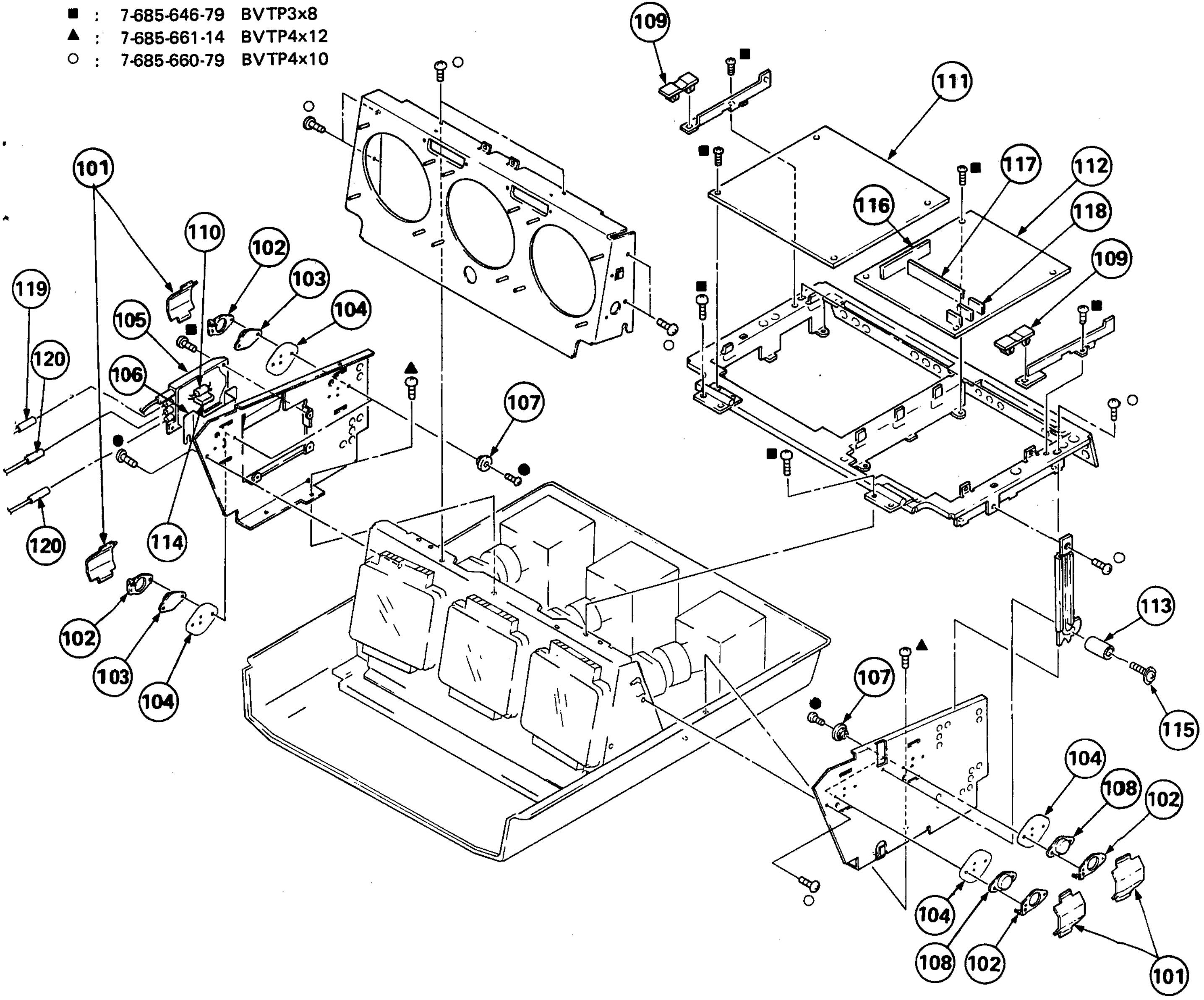

65
69
65
70
67
66
68
88
86
81
97
81
7-626-302-31
SPRING PIN, 2.5x14
85
87
7-685-659-70
BVTP 4x8
P3x8
7-682-548-04
59
60
53
54
52
96
92
93
84
83
97
94
61
91
81
95
7-685-135-19
P2.6x10
55
100
79
80
83
90
98
56
62
82
58
99
51
73
72
63
57
72
74
64
71
75
76
77
78

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
51	4-378-659-01	PANEL, CONNECTOR	
52	4-383-097-01	PLATE (ACE), CONNECTOR	
53	4-362-811-00	BUTTON, MAIN POWER	
54	⚠1-509-547-11	3P INLET	
55	⚠1-554-913-11	SWITCH, SLIDE (VOLTAGE CHANGE)	
56	4-374-303-01	RIVET, NYLON	
57	⚠1-558-365-11	CONNECTOR ASSY, ROUND TYPE 14P	
58	*1-618-724-11	QB BOARD	
59	⚠1-570-052-12	SWITCH, PUSH (AC POWER)(1 KEY)	
60	*1-620-495-11	FA BOARD	
61	*A-1316-058-A	GA BOARD, COMPLETE	
62	*A-1275-081-A	QA BOARD, COMPLETE	
63	1-543-179-00	CORE, RING	
64	⚠1-217-183-11	RES, WIREWOUND 2.7 10% 15W	
65	*3-659-681-00	HOLDER, PC BOARD	
66	*3-703-141-00	HOLDER, PCB	
67	*4-321-929-00	HOLDER, PC BOARD	
68	*3-701-903-00	HOLDER, PC BOARD	
69	*1-620-496-11	FC BOARD	
70	*1-623-485-11	GB BOARD	
71	*1-617-556-21	FB BOARD	
72	*4-378-671-01	SPRING	
73	⚠1-570-258-32	SWITCH, THERMAL REED	
74	4-313-734-00	BUSHING TR, Y	
75	3-701-353-00	SPACER, MICA	
76	8-729-311-42	TRANSISTOR 2SC1114	
77	*4-314-938-01	RETAINER (TO-3), TRANSISTOR	
78	4-378-620-01	COVER, TR	
79	⚠1-552-437-11	SWITCH, LEVER	
80	*1-617-563-21	X BOARD	
81	1-518-590-11	LAMP, PILOT (WITH HOLDER)	
82	9-911-840-XX	CUSHION	
83	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
84	*A-1165-030-A	DB BOARD, COMPLETE	96,97
85	*4-378-608-01	ACTUATOR	
86	4-362-808-00	BUTTON, POWER	
87	4-362-809-00	BUTTON, SELECT	
88	*4-378-633-01	COVER, ADJUSTMENT	
90	*A-1135-376-A	BA BOARD, COMPLETE	92-95
91	*4-309-378-00	SPACER	
92	*1-617-537-11	BE BOARD	
93	*1-617-536-11	BD BOARD	
94	*1-617-535-11	BC BOARD	
95	*1-617-538-11	BF BOARD	
96	*1-617-550-11	DC BOARD	
97	*1-617-551-11	DD BOARD	
98	*4-373-139-01	COVER, AC	
99	9-911-838-XX	SHEET	
100	*1-619-628-11	GC BOARD	

8-3. DA BOARD

● : 7-685-648-79 BVTP3x12
■ : 7-685-646-79 BVTP3x8
▲ : 7-685-661-14 BVTP4x12
○ : 7-685-660-79 BVTP4x10

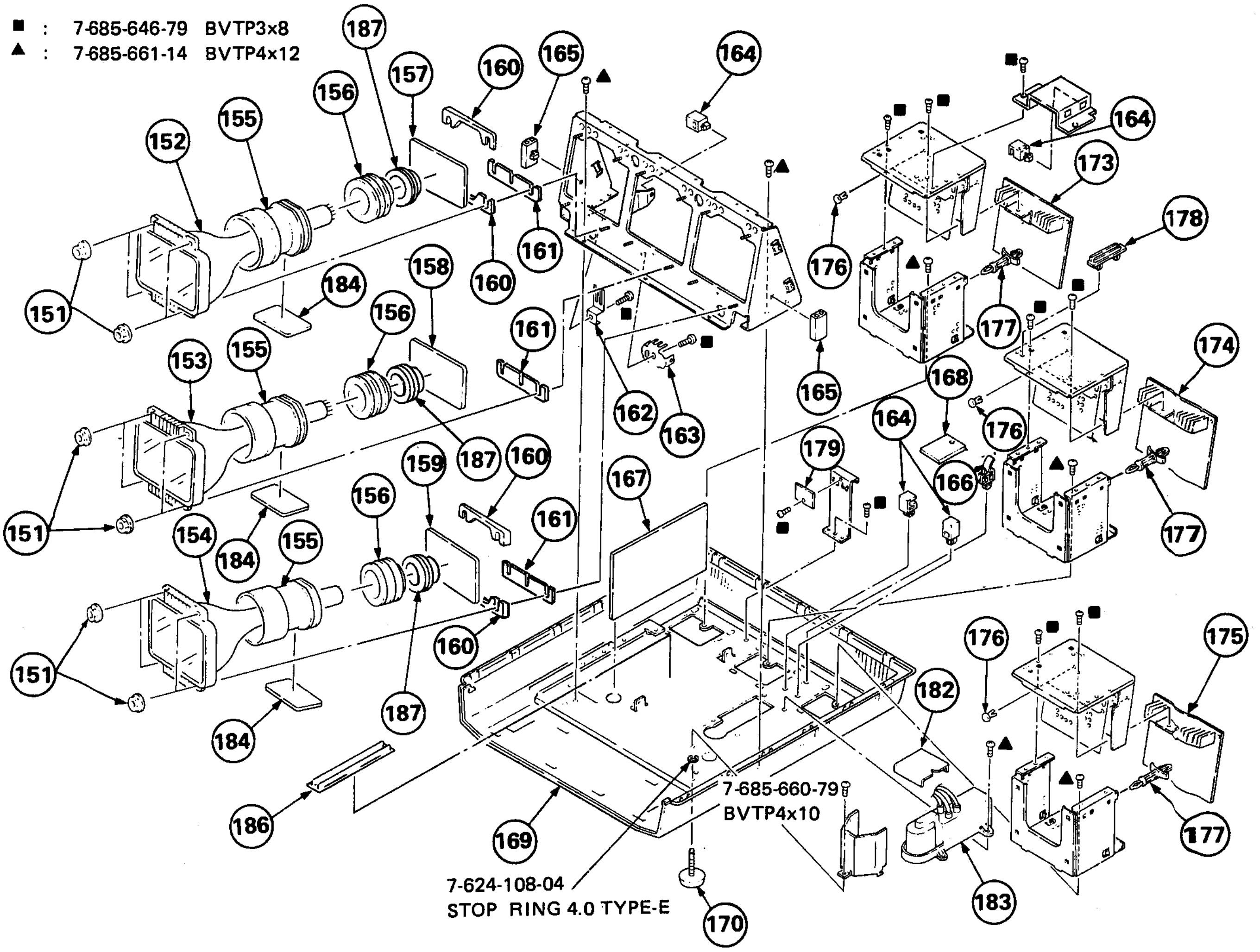

109
111
101
110
102
103
104
119
105
120
106
107
116
117
112
118
109
120
114
102
103
104
113
107
115
104
108
102
104
108
102
101

No.	Part No.	Description	Remark
101	4-378-620-01	COVER, TR	
102	*4-314-938-01	RETAINER (TO-3), TRANSISTOR	
103	8-729-302-02	TRANSISTOR 2SD905	
104	3-701-353-00	SPACER, MICA	
105	⚠1-230-089-22	RESISTOR ASSY, HIGH-VOLTAGE	
106	*4-378-614-01	COVER, FOCUS BLOCK	
107	3-703-320-00	BUSHING (A), TRANSISTOR	
108	8-729-311-62	TRANSISTOR 2SC1116	
109	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
110	1-202-723-00	RES, SOLID 2.2M 10% 1/2W	
111	*A-1165-028-A	DA BOARD, COMPLETE	
112	*A-1135-433-A	BB BOARD, COMPLETE	116-118
113	3-659-365-00	SPACER (4X3)	
114	1-519-063-XX	DISCHARGING GAP	
115	3-703-251-00	SCREW (+M4), IT TAPPING	
116	*1-617-541-11	BI BOARD	
117	*1-617-540-11	BH BOARD	
118	*1-617-539-11	BG BOARD	
119	1-556-880-51	LEAD ASSY, HIGH-VOLTAGE	
120	1-556-880-81	LEAD ASSY, HIGH-VOLTAGE	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

8-4. BASE ASSY

■ : 7-685-646-79 BVTP3x8
▲ : 7-685-661-14 BVTP4x12


187
157
156
155
152
160
165
164
164
173
178
151
184
158
156
161
160
161
176
177
174
153
155
162
163
165
168
176
187
159
160
167
179
164
166
177
151
154
156
155
184
161
160
176
175
182
151
187
184
186
169
183
177
170
7-685-660-79
BVTP4x10
7-624-108-04
STOP RING 4.0 TYPE-E

No.	Part No.	Description	Remark
151	4-304-749-00	NUT, FLANGE	
152	⚠8-736-053-05	PICTURE TUBE (SD-130(R))	
153	⚠8-736-051-05	PICTURE TUBE (SD-130(G))	
154	⚠8-733-022-05	PICTURE TUBE (SD-187(B))	
155	⚠1-451-283-11	DEFLECTION YOKE (SY-130M)	
156	⚠1-452-302-31	CRT NECK ASSEMBLY	
157	*1-617-545-21	CBR BOARD	
158	*1-617-546-21	CBG BOARD	
159	*1-617-547-21	CBB BOARD	
160	*4-378-603-01	SPACER (100"), CRT	
161	*4-378-602-01	SPACER, 100"	
162	4-332-209-00	SPRING	
163	*4-309-624-00	TERMINAL, EARTH	
164	*3-701-903-00	HOLDER, PC BOARD	
165	*4-026-507-00	SPACER	
166	*3-703-141-00	HOLDER, PCB	
167	*A-1345-682-A	EA BOARD, COMPLETE	
168	*1-617-553-21	EB BOARD	
169	X-4378-605-1	BASE ASSY	170
170	4-378-622-01	ADJUSTOR	
173	*A-1330-691-A	CA R BOARD, COMPLETE	
174	*A-1330-692-A	CA G BOARD, COMPLETE	
175	*A-1330-693-A	CA B BOARD, COMPLETE	
176	4-812-134-11	RIVET NYLON, 3.5	
177	*3-681-127-00	HOLDER, PC BOARD	
178	*3-680-613-11	SUPPORT, PC BOARD	
179	*1-617-564-21	Y BOARD	
182	*4-362-889-01	SHEET (G), INSULATING	
183	⚠1-453-095-15	DC BLOCK, HIGH-VOLTAGE(F.B.T)	
184	*1-617-554-21	EC BOARD	
186	*3-680-613-01	SUPPORT, PC BOARD	
187	⚠1-452-261-41	CRT NECK ASSY (362)	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 9
ELECTRICAL PARTS LIST

BA

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

When indicating parts by reference number, please include the board name.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS

- MF : μF, PF : μμF

RESISTORS

- All resistors are in ohms
- F : nonflammable

COILS

- MMH : mH, UH : μH

- **The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.**

Ref.No.	Part No.	Description			Remark
	*A-1135-376-A	BA BOARD, COMPLETE ******************			
		CONNECTOR			
BA1	*1-566-055-11	PIN, CONNECTOR 3P			
BA2	*1-566-055-11	PIN, CONNECTOR 3P			
BA3	*1-566-056-11	PIN, CONNECTOR 4P			
BA4	*1-566-057-11	PIN, CONNECTOR 5P			
BA5	*1-566-057-11	PIN, CONNECTOR 5P			
BA6	*1-566-059-11	PIN, CONNECTOR 7P			
BA7	*1-566-060-11	PIN, CONNECTOR 8P			
BA8	*1-566-059-11	PIN, CONNECTOR 7P			
BA9	*1-566-058-11	PIN, CONNECTOR 6P			
BA10	*1-566-058-11	PIN, CONNECTOR 6P			
BA11	*1-566-055-11	PIN, CONNECTOR 3P			
		CAPACITOR			
C1	1-136-173-00	FILM	0.47MF	5%	50V
C2	1-124-236-00	ELECT	47MF	20%	16V
C6	1-124-236-00	ELECT	47MF	20%	16V
C7	1-136-173-00	FILM	0.47MF	5%	50V
C8	1-124-236-00	ELECT	47MF	20%	16V
C21	1-123-611-00	ELECT	1MF	20%	50V
C23	1-161-021-11	CERAMIC	0.047MF	10%	25V
C24	1-124-236-00	ELECT	47MF	20%	16V
C26	1-124-462-00	ELECT	10MF	20%	16V
C101	1-102-973-00	CERAMIC	100PF	5%	50V
C102	1-124-462-00	ELECT	10MF	20%	16V
C103	1-124-462-00	ELECT	10MF	20%	16V
C104	1-102-815-00	CERAMIC	110PF	5%	50V
C105	1-123-333-00	ELECT	100MF	20%	16V
C106	1-102-971-00	CERAMIC	82PF	5%	50V
C107	1-102-959-00	CERAMIC	22PF	5%	50V
C108	1-101-888-00	CERAMIC	68PF	5%	50V
C109	1-101-880-00	CERAMIC	47PF	5%	50V
C112	1-136-165-00	FILM	0.1MF	5%	50V
C117	1-102-944-00	CERAMIC	7PF	0.5PF	50V
C118	1-102-944-00	CERAMIC	7PF	0.5PF	50V
C121	1-102-944-00	CERAMIC	7PF	0.5PF	50V
C122	1-102-944-00	CERAMIC	7PF	0.5PF	50V
C124	1-102-951-00	CERAMIC	15PF	5%	50V
C127	1-124-462-00	ELECT	10MF	20%	16V
C128	1-123-611-00	ELECT	1MF	20%	50V
C129	1-124-236-00	ELECT	47MF	20%	16V
C130	1-161-021-11	CERAMIC	0.047MF	10%	25V
C135	1-102-949-00	CERAMIC	12PF	5%	50V
C144	1-102-978-00	CERAMIC	220PF	5%	50V
C145	1-124-284-00	ELECT	10MF	20%	16V
C301	1-124-236-00	ELECT	47MF	20%	16V
C302	1-161-021-11	CERAMIC	0.047MF	10%	25V
C303	1-124-247-00	ELECT	10MF	20%	25V
C304	1-124-462-00	ELECT	10MF	20%	16V
C305	1-124-236-00	ELECT	47MF	20%	16V
C306	1-102-949-00	CERAMIC	12PF	5%	50V
C307	1-123-611-00	ELECT	1MF	20%	50V
C308	1-123-611-00	ELECT	1MF	20%	50V
C309	1-101-004-00	CERAMIC	0.01MF		50V
C310	1-101-004-00	CERAMIC	0.01MF		50V
C311	1-101-004-00	CERAMIC	0.01MF		50V
C312	1-101-884-00	CERAMIC	56PF	5%	50V
C313	1-101-888-00	CERAMIC	68PF	5%	50V
C314	1-101-361-00	CERAMIC	150PF	5%	50V
C315	1-101-004-00	CERAMIC	0.01MF		50V
C316	1-123-611-00	ELECT	1MF	20%	50V
C317	1-136-165-00	FILM	0.1MF	5%	50V
C318	1-136-165-00	FILM	0.1MF	5%	50V
C319	1-101-004-00	CERAMIC	0.01MF		50V
C320	1-101-004-00	CERAMIC	0.01MF		50V
C321	1-123-611-00	ELECT	1MF	20%	50V
C322	1-101-004-00	CERAMIC	0.01MF		50V
C323	1-101-004-00	CERAMIC	0.01MF		50V
C324	1-101-004-00	CERAMIC	0.01MF		50V
C325	1-101-880-00	CERAMIC	47PF	5%	50V
C326	1-102-944-00	CERAMIC	7PF	0.5PF	50V
C327	1-102-959-00	CERAMIC	22PF	5%	50V
C328	1-136-165-00	FILM	0.1MF	5%	50V
C329	1-124-257-00	ELECT	2.2MF	20%	50V
C330	1-101-880-00	CERAMIC	47PF	5%	50V
C331	1-101-880-00	CERAMIC	47PF	5%	50V
C332	1-161-021-11	CERAMIC	0.047MF	10%	25V
C333	1-102-963-00	CERAMIC	33PF	5%	50V
C334	1-102-934-00	CERAMIC	1PF	0.25PF	50V
C335	1-101-004-00	CERAMIC	0.01MF		50V
C336	1-101-004-00	CERAMIC	0.01MF		50V
C337	1-136-165-00	FILM	0.1MF	5%	50V
C338	1-101-004-00	CERAMIC	0.01MF		50V
C401	1-124-236-00	ELECT	47MF	20%	16V
C402	1-161-021-11	CERAMIC	0.047MF	10%	25V
C403	1-124-463-00	ELECT	0.1MF	20%	50V
C404	1-124-463-00	ELECT	0.1MF	20%	50V
C405	1-124-463-00	ELECT	0.1MF	20%	50V
C406	1-124-245-00	ELECT	4.7MF	20%	25V
C407	1-101-361-00	CERAMIC	150PF	5%	50V
C408	1-102-971-00	CERAMIC	82PF	5%	50V
C409	1-161-021-11	CERAMIC	0.047MF	10%	25V
C410	1-102-959-00	CERAMIC	22PF	5%	50V
C411	1-161-021-11	CERAMIC	0.047MF	10%	25V
C412	1-161-021-11	CERAMIC	0.047MF	10%	25V
C413	1-101-004-00	CERAMIC	0.01MF		50V
C414	1-101-004-00	CERAMIC	0.01MF		50V
C415	1-136-165-00	FILM	0.1MF	5%	50V
C416	1-102-816-00	CERAMIC	120PF	5%	50V
C417	1-124-247-00	ELECT	10MF	20%	25V
C418	1-101-004-00	CERAMIC	0.01MF		50V
C419	1-136-165-00	FILM	0.1MF	5%	50V

BA

Ref.No.	Part No.	Description			Remark
C420	1-101-004-00	CERAMIC	0.01MF		50V
C421	1-101-880-00	CERAMIC	47PF	5%	50V
C422	1-102-959-00	CERAMIC	22PF	5%	50V
C423	1-101-004-00	CERAMIC	0.01MF		50V
C424	1-102-971-00	CERAMIC	82PF	5%	50V
C425	1-101-361-00	CERAMIC	150PF	5%	50V
C426	1-124-245-00	ELECT	4.7MF	20%	25V
C427	1-123-611-00	ELECT	1MF	20%	50V
C428	1-101-888-00	CERAMIC	68PF	5%	50V
C429	1-101-004-00	CERAMIC	0.01MF		50V
C430	1-161-021-11	CERAMIC	0.047MF	10%	25V
C431	1-136-157-00	FILM	0.022MF	5%	50V
C432	1-124-465-00	ELECT	0.47MF	20%	50V
C433	1-124-257-00	ELECT	2.2MF	20%	50V
C434	1-101-004-00	CERAMIC	0.01MF		50V
C435	1-101-004-00	CERAMIC	0.01MF		50V
C436	1-101-004-00	CERAMIC	0.01MF		50V
C437	1-161-021-11	CERAMIC	0.047MF	10%	25V
C438	1-102-973-00	CERAMIC	100PF	5%	50V
C439	1-102-973-00	CERAMIC	100PF	5%	50V
C440	1-102-973-00	CERAMIC	100PF	5%	50V
C441	1-101-361-00	CERAMIC	150PF	5%	50V
C501	1-123-611-00	ELECT	1MF	20%	50V
C502	1-161-021-11	CERAMIC	0.047MF	10%	25V
C503	1-124-462-00	ELECT	10MF	20%	16V
C504	1-161-021-11	CERAMIC	0.047MF	10%	25V
C505	1-124-236-00	ELECT	47MF	20%	16V
C506	1-161-021-11	CERAMIC	0.047MF	10%	25V
C507	1-124-236-00	ELECT	47MF	20%	16V
C508	1-124-236-00	ELECT	47MF	20%	16V
C509	1-161-021-11	CERAMIC	0.047MF	10%	25V
C510	1-124-236-00	ELECT	47MF	20%	16V
C511	1-161-021-11	CERAMIC	0.047MF	10%	25V
C512	1-124-236-00	ELECT	47MF	20%	16V
C513	1-161-021-11	CERAMIC	0.047MF	10%	25V
C514	1-124-236-00	ELECT	47MF	20%	16V
C515	1-161-021-11	CERAMIC	0.047MF	10%	25V
C516	1-161-021-11	CERAMIC	0.047MF	10%	25V
C551	1-161-021-11	CERAMIC	0.047MF	10%	25V
C552	1-124-462-00	ELECT	10MF	20%	16V
C553	1-124-236-00	ELECT	47MF	20%	16V
C554	1-161-021-11	CERAMIC	0.047MF	10%	25V
C555	1-124-236-00	ELECT	47MF	20%	16V
C556	1-161-021-11	CERAMIC	0.047MF	10%	25V
C557	1-161-021-11	CERAMIC	0.047MF	10%	25V
C601	1-123-611-00	ELECT	1MF	20%	50V
C602	1-161-021-11	CERAMIC	0.047MF	10%	25V
C603	1-124-462-00	ELECT	10MF	20%	16V
C651	1-123-611-00	ELECT	1MF	20%	50V
C652	1-161-021-11	CERAMIC	0.047MF	10%	25V
C653	1-124-462-00	ELECT	10MF	20%	16V
C654	1-124-236-00	ELECT	47MF	20%	16V
C655	1-161-021-11	CERAMIC	0.047MF	10%	25V

Ref.No.	Part No.	Description	Remark
		DIODE.	
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D11	8-719-911-19	DIODE 1SS119	
D12	8-719-911-19	DIODE 1SS119	
D13	8-719-911-19	DIODE 1SS119	
D14	8-719-911-19	DIODE 1SS119	
D101	8-719-911-19	DIODE 1SS119	
D102	8-719-911-19	DIODE 1SS119	
D103	8-719-911-19	DIODE 1SS119	
D104	8-719-911-19	DIODE 1SS119	
D105	8-719-911-19	DIODE 1SS119	
D107	8-719-911-19	DIODE 1SS119	
D109	8-719-911-19	DIODE 1SS119	
D110	8-719-911-19	DIODE 1SS119	
D111	8-719-911-19	DIODE 1SS119	
D301	8-719-911-19	DIODE 1SS119	
D302	8-719-911-19	DIODE 1SS119	
D303	8-719-911-19	DIODE 1SS119	
D304	8-719-911-19	DIODE 1SS119	
D307	8-719-911-19	DIODE 1SS119	
D401	8-719-911-19	DIODE 1SS119	
D402	8-719-911-19	DIODE 1SS119	
D403	8-719-911-19	DIODE 1SS119	
D405	8-719-911-19	DIODE 1SS119	
D501	8-719-812-41	DIODE TLR124	
D551	8-719-812-41	DIODE TLR124	
D601	8-719-812-41	DIODE TLR124	
		DELAY LINE	
DL101	1-415-284-00	DELAY LINE (1H)	
DL103	1-415-495-11	DELAY LINE, Y	
DL104	1-415-496-11	DELAY LINE, Y	
DL105	1-415-494-11	DELAY LINE, Y	
DL301	1-415-122-31	DELAY LINE, 1H (PAL)	
		IC	
IC9	8-759-708-09	IC NJM78L09A	
IC101	8-759-913-11	IC CX20125	
IC301	8-759-113-65	IC UPC1365C	
IC302	8-759-140-66	IC UPD4066BC	
IC401	8-759-100-15	IC UPC1364C2	
IC402	8-759-145-58	IC UPC4558C	
IC501	8-759-170-12	IC UPC78M12H	
IC551	8-759-170-12	IC UPC78M12H	
IC601	8-759-700-69	IC NJM79L12A	
IC651	8-759-108-05	IC UPC78L05A	
		COIL	
L101	1-408-412-00	MICRO INDUCTOR 18UH	
L102	1-408-513-00	COIL (VARIABLE)	
L103	1-408-520-00	COIL, VARIABLE	
L104	1-408-411-00	MICRO INDUCTOR 15UH	

Ref.No.	Part No.	Description	Remark
L105	1-408-414-00	MICRO INDUCTOR 27UH	
L106	1-408-414-00	MICRO INDUCTOR 27UH	
L107	1-408-409-00	MICRO INDUCTOR 10UH	
L111	1-409-193-00	COIL 3.58MHZ TRAP	
L113	1-409-193-00	COIL 3.58MHZ TRAP	
L117	1-408-397-00	MICRO INDUCTOR 1UH	
L301	1-408-412-00	MICRO INDUCTOR 18UH	
L302	1-408-408-00	MICRO INDUCTOR 8.2UH	
L303	1-408-416-00	MICRO INDUCTOR 39UH	
L304	1-408-406-00	MICRO INDUCTOR 5.6UH	
L401	1-408-532-00	COIL, VARIABLE	
L402	1-408-532-00	COIL, VARIABLE	
L403	1-408-513-00	COIL (VARIABLE)	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-603-50	TRANSISTOR 2SC403SP	
Q3	8-729-384-46	TRANSISTOR 2SA844-C	
Q4	8-729-900-89	TRANSISTOR DTC144ES	
Q5	8-729-603-50	TRANSISTOR 2SC403SP	
Q6	8-729-603-50	TRANSISTOR 2SC403SP	
Q9	8-729-384-46	TRANSISTOR 2SA844-C	
Q10	8-729-900-89	TRANSISTOR DTC144ES	
Q11	8-729-603-50	TRANSISTOR 2SC403SP	
Q12	8-729-603-50	TRANSISTOR 2SC403SP	
Q13	8-729-900-89	TRANSISTOR DTC144ES	
Q14	8-729-384-46	TRANSISTOR 2SA844-C	
Q16	8-729-384-46	TRANSISTOR 2SA844-C	
Q17	8-729-384-46	TRANSISTOR 2SA844-C	
Q18	8-729-900-89	TRANSISTOR DTC144ES	
Q19	8-729-178-54	TRANSISTOR 2SC2785	
Q27	8-729-117-54	TRANSISTOR 2SA1175	
Q101	8-729-603-50	TRANSISTOR 2SC403SP	
Q102	8-729-384-46	TRANSISTOR 2SA844-C	
Q103	8-729-384-46	TRANSISTOR 2SA844-C	
Q104	8-729-603-50	TRANSISTOR 2SC403SP	
Q105	8-729-384-46	TRANSISTOR 2SA844-C	
Q106	8-729-384-46	TRANSISTOR 2SA844-C	
Q107	8-729-603-50	TRANSISTOR 2SC403SP	
Q108	8-729-384-46	TRANSISTOR 2SA844-C	
Q109	8-729-603-50	TRANSISTOR 2SC403SP	
Q110	8-729-384-46	TRANSISTOR 2SA844-C	
Q111	8-729-603-50	TRANSISTOR 2SC403SP	
Q112	8-729-384-46	TRANSISTOR 2SA844-C	
Q113	8-729-900-89	TRANSISTOR DTC144ES	
Q114	8-729-603-50	TRANSISTOR 2SC403SP	
Q115	8-729-384-46	TRANSISTOR 2SA844-C	
Q116	8-729-603-50	TRANSISTOR 2SC403SP	
Q117	8-729-384-46	TRANSISTOR 2SA844-C	
Q118	8-729-900-89	TRANSISTOR DTC144ES	
Q119	8-729-603-50	TRANSISTOR 2SC403SP	
Q120	8-729-384-46	TRANSISTOR 2SA844-C	
Q121	8-729-384-46	TRANSISTOR 2SA844-C	
Q122	8-729-900-89	TRANSISTOR DTC144ES	
Q123	8-729-603-50	TRANSISTOR 2SC403SP	
Q124	8-729-603-50	TRANSISTOR 2SC403SP	
Q125	8-729-603-50	TRANSISTOR 2SC403SP	
Q126	8-729-384-46	TRANSISTOR 2SA844-C	
Q127	8-729-384-46	TRANSISTOR 2SA844-C	
Q128	8-729-900-89	TRANSISTOR DTC144ES	
Q129	8-729-603-50	TRANSISTOR 2SC403SP	
Q130	8-729-384-46	TRANSISTOR 2SA844-C	
Q131	8-729-384-46	TRANSISTOR 2SA844-C	
Q132	8-729-900-89	TRANSISTOR DTC144ES	
Q133	8-729-603-50	TRANSISTOR 2SC403SP	
Q134	8-729-603-50	TRANSISTOR 2SC403SP	
Q135	8-729-603-50	TRANSISTOR 2SC403SP	
Q136	8-729-603-50	TRANSISTOR 2SC403SP	
Q137	8-729-384-46	TRANSISTOR 2SA844-C	
Q138	8-729-603-30	TRANSISTOR 2SC403SP	
Q139	8-729-384-46	TRANSISTOR 2SA844-C	
Q140	8-729-900-89	TRANSISTOR DTC144ES	
Q141	8-729-603-50	TRANSISTOR 2SC403SP	
Q142	8-729-603-50	TRANSISTOR 2SC403SP	
Q143	8-729-384-46	TRANSISTOR 2SA844-C	
Q144	8-729-603-50	TRANSISTOR 2SC403SP	
Q145	8-729-603-50	TRANSISTOR 2SC403SP	
Q146	8-729-384-46	TRANSISTOR 2SA844-C	
Q147	8-729-603-50	TRANSISTOR 2SC403SP	
Q148	8-729-384-46	TRANSISTOR 2SA844-C	
Q149	8-729-384-46	TRANSISTOR 2SA844-C	
Q150	8-729-603-50	TRANSISTOR 2SC403SP	
Q151	8-729-603-50	TRANSISTOR 2SC403SP	
Q156	8-729-900-89	TRANSISTOR DTC144ES	
Q157	8-729-900-89	TRANSISTOR DTC144ES	
Q301	8-729-117-54	TRANSISTOR 2SA1175	
Q302	8-729-384-46	TRANSISTOR 2SA844-C	
Q303	8-729-384-46	TRANSISTOR 2SA844-C	
Q304	8-729-384-46	TRANSISTOR 2SA844-C	
Q305	8-729-603-50	TRANSISTOR 2SC403SP	
Q306	8-729-603-50	TRANSISTOR 2SC403SP	
Q307	8-729-603-50	TRANSISTOR 2SC403SP	
Q308	8-729-603-50	TRANSISTOR 2SC403SP	
Q309	8-729-115-10	TRANSISTOR 2SK105A-10	
Q310	8-729-115-30	TRANSISTOR 2SK105A-30	
Q311	8-729-603-50	TRANSISTOR 2SC403SP	
Q312	8-729-115-10	TRANSISTOR 2SK105A-10	
Q313	8-729-115-10	TRANSISTOR 2SK105A-10	
Q314	8-729-900-89	TRANSISTOR DTC144ES	
Q401	8-729-384-46	TRANSISTOR 2SA844-C	
Q402	8-729-384-46	TRANSISTOR 2SA844-C	
Q403	8-729-384-46	TRANSISTOR 2SA844-C	
Q404	8-729-117-54	TRANSISTOR 2SA1175	
Q405	8-729-900-89	TRANSISTOR DTC144ES	
Q406	8-729-178-54	TRANSISTOR 2SC2785	
Q407	8-729-178-54	TRANSISTOR 2SC2785	
Q408	8-729-117-54	TRANSISTOR 2SA1175	

BA

Ref.No.	Part No.	Description				Remark
Q409	8-729-115-10	TRANSISTOR 2SK105A-10				
Q411	8-729-178-54	TRANSISTOR 2SC2785				
Q412	8-729-178-54	TRANSISTOR 2SC2785				
Q413	8-729-178-54	TRANSISTOR 2SC2785				
		RESISTOR				
R1	1-249-405-11	CARBON	100	5%	1/4W	
R2	1-249-431-11	CARBON	15K	5%	1/4W	
R5	1-249-424-11	CARBON	3.9K	5%	1/4W	
R6	1-247-895-00	CARBON	470K	5%	1/4W	
R7	1-249-421-11	CARBON	2.2K	5%	1/4W	
R8	1-249-421-11	CARBON	2.2K	5%	1/4W	
R10	1-249-405-11	CARBON	100	5%	1/4W	
R11	1-249-417-11	CARBON	1K	5%	1/4W	
R12	1-249-431-11	CARBON	15K	5%	1/4W	
R13	1-249-405-11	CARBON	100	5%	1/4W	
R14	1-249-405-11	CARBON	100	5%	1/4W	
R15	1-249-405-11	CARBON	100	5%	1/4W	
R16	1-249-417-11	CARBON	1K	5%	1/4W	
R17	1-249-431-11	CARBON	15K	5%	1/4W	
R18	1-249-405-11	CARBON	100	5%	1/4W	
R20	1-249-421-11	CARBON	2.2K	5%	1/4W	
R22	1-249-405-11	CARBON	100	5%	1/4W	
R23	1-249-417-11	CARBON	1K	5%	1/4W	
R24	1-249-431-11	CARBON	15K	5%	1/4W	
R25	1-249-441-11	CARBON	100K	5%	1/4W	
R26	1-249-405-11	CARBON	100	5%	1/4W	
R27	1-249-436-11	CARBON	39K	5%	1/4W	
R28	1-247-895-00	CARBON	470K	5%	1/4W	
R29	1-249-429-11	CARBON	10K	5%	1/4W	
R30	1-249-424-11	CARBON	3.9K	5%	1/4W	
R31	1-215-493-00	CARBON	1M	5%	1/4W	
R33	1-249-405-11	CARBON	100	5%	1/4W	
R34	1-249-428-11	CARBON	8.2K	5%	1/4W	
R35	1-249-430-11	CARBON	12K	5%	1/4W	
R36	1-249-418-11	CARBON	1.2K	5%	1/4W	
R37	1-249-418-11	CARBON	1.2K	5%	1/4W	
R38	1-249-438-11	CARBON	56K	5%	1/4W	
R40	1-249-430-11	CARBON	12K	5%	1/4W	
R41	1-249-417-11	CARBON	1K	5%	1/4W	
R42	1-249-433-11	CARBON	22K	5%	1/4W	
R58	1-249-433-11	CARBON	22K	5%	1/4W	
R59	1-249-433-11	CARBON	22K	5%	1/4W	
R60	1-249-431-11	CARBON	15K	5%	1/4W	
R61	1-249-427-11	CARBON	6.8K	5%	1/4W	
R101	1-249-405-11	CARBON	100	5%	1/4W	
R102	1-249-413-11	CARBON	470	5%	1/4W	
R103	1-249-419-11	CARBON	1.5K	5%	1/4W	
R104	1-249-413-11	CARBON	470	5%	1/4W	
R105	1-249-419-11	CARBON	1.5K	5%	1/4W	
R106	1-249-419-11	CARBON	1.5K	5%	1/4W	
R107	1-249-425-11	CARBON	4.7K	5%	1/4W	
R108	1-249-409-11	CARBON	220	5%	1/4W	
R109	1-249-415-11	CARBON	680	5%	1/4W	
R110	1-249-397-11	CARBON	22	5%	1/4W	
R111	1-249-409-11	CARBON	220	5%	1/4W	
R112	1-215-407-00	METAL	270	1%	1/6W	
R113	1-249-405-11	CARBON	100	5%	1/4W	
R114	1-249-415-11	CARBON	680	5%	1/4W	
R115	1-249-415-11	CARBON	680	5%	1/4W	
R116	1-249-415-11	CARBON	680	5%	1/4W	
R117	1-249-415-11	CARBON	680	5%	1/4W	
R118	1-249-415-11	CARBON	680	5%	1/4W	
R119	1-249-431-11	CARBON	15K	5%	1/4W	
R120	1-249-425-11	CARBON	4.7K	5%	1/4W	
R121	1-249-413-11	CARBON	470	5%	1/4W	
R122	1-215-404-00	CARBON	200	5%	1/4W	
R123	1-249-419-11	CARBON	1.5K	5%	1/4W	
R124	1-249-415-11	CARBON	680	5%	1/4W	
R125	1-249-415-11	CARBON	680	5%	1/4W	
R126	1-249-419-11	CARBON	1.5K	5%	1/4W	
R127	1-249-415-11	CARBON	680	5%	1/4W	
R128	1-249-413-11	CARBON	470	5%	1/4W	
R129	1-249-408-11	CARBON	180	5%	1/4W	
R130	1-249-419-11	CARBON	1.5K	5%	1/4W	
R131	1-249-416-11	CARBON	820	5%	1/4W	
R132	1-249-405-11	CARBON	100	5%	1/4W	
R133	1-249-425-11	CARBON	4.7K	5%	1/4W	
R135	1-249-429-11	CARBON	10K	5%	1/4W	
R136	1-249-421-11	CARBON	2.2K	5%	1/4W	
R138	1-249-434-11	CARBON	27K	5%	1/4W	
R139	1-249-431-11	CARBON	15K	5%	1/4W	
R140	1-249-431-11	CARBON	15K	5%	1/4W	
R141	1-249-417-11	CARBON	1K	5%	1/4W	
R143	1-249-438-11	CARBON	56K	5%	1/4W	
R144	1-249-434-11	CARBON	27K	5%	1/4W	
R145	1-249-405-11	CARBON	100	5%	1/4W	
R146	1-249-419-11	CARBON	1.5K	5%	1/4W	
R147	1-249-423-11	CARBON	3.3K	5%	1/4W	
R148	1-249-405-11	CARBON	100	5%	1/4W	
R149	1-249-423-11	CARBON	3.3K	5%	1/4W	
R150	1-249-424-11	CARBON	3.9K	5%	1/4W	
R151	1-249-405-11	CARBON	100	5%	1/4W	
R152	1-249-416-11	CARBON	820	5%	1/4W	
R153	1-249-405-11	CARBON	100	5%	1/4W	
R154	1-249-417-11	CARBON	1K	5%	1/4W	
R155	1-249-431-11	CARBON	15K	5%	1/4W	
R157	1-249-405-11	CARBON	100	5%	1/4W	
R159	1-249-415-11	CARBON	680	5%	1/4W	
R160	1-249-419-11	CARBON	1.5K	5%	1/4W	
R161	1-249-422-11	CARBON	2.7K	5%	1/4W	
R162	1-249-429-11	CARBON	10K	5%	1/4W	
R163	1-249-431-11	CARBON	15K	5%	1/4W	
R164	1-249-417-11	CARBON	1K	5%	1/4W	
R166	1-249-405-11	CARBON	100	5%	1/4W	
R167	1-249-416-11	CARBON	820	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R168	1-249-405-11	CARBON	100	5%	1/4W	
R169	1-249-405-11	CARBON	100	5%	1/4W	
R170	1-249-421-11	CARBON	2.2K	5%	1/4W	
R172	1-249-421-11	CARBON	2.2K	5%	1/4W	
R173	1-249-434-11	CARBON	27K	5%	1/4W	
R174	1-249-416-11	CARBON	820	5%	1/4W	
R175	1-249-417-11	CARBON	1K	5%	1/4W	
R176	1-249-413-11	CARBON	470	5%	1/4W	
R177	1-249-417-11	CARBON	1K	5%	1/4W	
R178	1-249-431-11	CARBON	15K	5%	1/4W	
R181	1-249-420-11	CARBON	1.8K	5%	1/4W	
R182	1-249-420-11	CARBON	1.8K	5%	1/4W	
R183	1-249-436-11	CARBON	39K	5%	1/4W	
R184	1-215-420-00	CARBON	910	5%	1/4W	
R185	1-249-417-11	CARBON	1K	5%	1/4W	
R186	1-249-413-11	CARBON	470	5%	1/4W	
R187	1-249-417-11	CARBON	1K	5%	1/4W	
R188	1-249-431-11	CARBON	15K	5%	1/4W	
R190	1-249-405-11	CARBON	100	5%	1/4W	
R191	1-249-422-11	CARBON	2.7K	5%	1/4W	
R192	1-249-405-11	CARBON	100	5%	1/4W	
R193	1-249-425-11	CARBON	4.7K	5%	1/4W	
R194	1-215-438-00	CARBON	5.1K	5%	1/4W	
R195	1-249-415-11	CARBON	680	5%	1/4W	
R196	1-249-420-11	CARBON	1.8K	5%	1/4W	
R197	1-249-405-11	CARBON	100	5%	1/4W	
R198	1-249-422-11	CARBON	2.7K	5%	1/4W	
R199	1-249-421-11	CARBON	2.2K	5%	1/4W	
R200	1-215-421-00	METAL	1K	1%	1/6W	
R201	1-215-423-00	METAL	1.2K	1%	1/6W	
R202	1-215-438-00	METAL	5.1K	1%	1/6W	
R203	1-249-417-11	CARBON	1K	5%	1/4W	
R204	1-249-431-11	CARBON	15K	5%	1/4W	
R206	1-249-405-11	CARBON	100	5%	1/4W	
R207	1-249-422-11	CARBON	2.7K	5%	1/4W	
R208	1-249-405-11	CARBON	100	5%	1/4W	
R209	1-215-421-00	METAL	1K	1%	1/6W	
R210	1-215-414-00	METAL	510	1%	1/6W	
R211	1-215-430-00	METAL	2.4K	1%	1/6W	
R212	1-215-416-00	METAL	620	1%	1/6W	
R213	1-249-424-11	CARBON	3.9K	5%	1/4W	
R215	1-249-425-11	CARBON	4.7K	5%	1/4W	
R216	1-249-425-11	CARBON	4.7K	5%	1/4W	
R217	1-249-422-11	CARBON	2.7K	5%	1/4W	
R218	1-249-422-11	CARBON	2.7K	5%	1/4W	
R219	1-215-489-00	CARBON	680K	5%	1/4W	
R220	1-249-425-11	CARBON	4.7K	5%	1/4W	
R221	1-249-425-11	CARBON	4.7K	5%	1/4W	
R222	1-249-421-11	CARBON	2.2K	5%	1/4W	
R223	1-249-423-11	CARBON	3.3K	5%	1/4W	
R224	1-249-421-11	CARBON	2.2K	5%	1/4W	
R227	1-247-838-00	CARBON	2K	5%	1/4W	
R229	1-249-418-11	CARBON	1.2K	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R230	1-249-405-11	CARBON	100	5%	1/4W	
R231	1-249-422-11	CARBON	2.7K	5%	1/4W	
R232	1-249-419-11	CARBON	1.5K	5%	1/4W	
R233	1-249-419-11	CARBON	1.5K	5%	1/4W	
R234	1-249-418-11	CARBON	1.2K	5%	1/4W	
R237	1-249-428-11	CARBON	8.2K	5%	1/4W	
R238	1-215-418-00	METAL	750	1%	1/6W	
R239	1-249-422-11	CARBON	2.7K	5%	1/4W	
R240	1-249-405-11	CARBON	100	5%	1/4W	
R241	1-249-422-11	CARBON	2.7K	5%	1/4W	
R257	1-249-425-11	CARBON	4.7K	5%	1/4W	
R258	1-215-397-00	METAL	100	1%	1/6W	
R264	1-249-439-11	CARBON	68K	5%	1/4W	
R267	1-249-429-11	CARBON	10K	5%	1/4W	
R270	1-249-429-11	CARBON	10K	5%	1/4W	
R271	1-249-425-11	CARBON	4.7K	5%	1/4W	
R272	1-249-421-11	CARBON	2.2K	5%	1/4W	
R273	1-249-413-11	CARBON	470	5%	1/4W	
R274	1-247-895-00	CARBON	470K	5%	1/4W	
R275	1-215-487-00	CARBON	560K	5%	1/4W	
R301	1-249-425-11	CARBON	4.7K	5%	1/4W	
R302	1-249-433-11	CARBON	22K	5%	1/4W	
R303	1-249-437-11	CARBON	47K	5%	1/4W	
R304	1-249-430-11	CARBON	12K	5%	1/4W	
R305	1-249-405-11	CARBON	100	5%	1/4W	
R306	1-249-436-11	CARBON	39K	5%	1/4W	
R307	1-249-435-11	CARBON	33K	5%	1/4W	
R308	1-249-440-11	CARBON	82K	5%	1/4W	
R309	1-215-493-00	CARBON	1M	5%	1/4W	
R310	1-249-428-11	CARBON	8.2K	5%	1/4W	
R311	1-249-429-11	CARBON	10K	5%	1/4W	
R312	1-249-430-11	CARBON	12K	5%	1/4W	
R313	1-249-438-11	CARBON	56K	5%	1/4W	
R314	1-249-439-11	CARBON	68K	5%	1/4W	
R315	1-249-433-11	CARBON	22K	5%	1/4W	
R316	1-249-435-11	CARBON	33K	5%	1/4W	
R317	1-249-427-11	CARBON	6.8K	5%	1/4W	
R318	1-249-435-11	CARBON	33K	5%	1/4W	
R319	1-249-433-11	CARBON	22K	5%	1/4W	
R320	1-249-439-11	CARBON	68K	5%	1/4W	
R321	1-249-440-11	CARBON	82K	5%	1/4W	
R322	1-249-411-11	CARBON	330	5%	1/4W	
R323	1-249-441-11	CARBON	100K	5%	1/4W	
R324	1-247-887-00	CARBON	220K	5%	1/4W	
R325	1-215-454-00	CARBON	24K	5%	1/4W	
R326	1-249-439-11	CARBON	68K	5%	1/4W	
R327	1-249-436-11	CARBON	39K	5%	1/4W	
R328	1-249-440-11	CARBON	82K	5%	1/4W	
R329	1-249-429-11	CARBON	10K	5%	1/4W	
R330	1-249-435-11	CARBON	33K	5%	1/4W	
R331	1-249-437-11	CARBON	47K	5%	1/4W	
R332	1-249-409-11	CARBON	220	5%	1/4W	
R333	1-249-419-11	CARBON	1.5K	5%	1/4W	

BA

Ref.No.	Part No.	Description				Remark
R334	1-249-416-11	CARBON	820	5%	1/4W	
R335	1-249-413-11	CARBON	470	5%	1/4W	
R336	1-249-405-11	CARBON	100	5%	1/4W	
R337	1-249-412-11	CARBON	390	5%	1/4W	
R338	1-249-415-11	CARBON	680	5%	1/4W	
R339	1-247-849-00	CARBON	5.6K	5%	1/4W	
R340	1-249-425-11	CARBON	4.7K	5%	1/4W	
R341	1-249-425-11	CARBON	4.7K	5%	1/4W	
R342	1-249-439-11	CARBON	68K	5%	1/4W	
R343	1-249-435-11	CARBON	33K	5%	1/4W	
R344	1-249-421-11	CARBON	2.2K	5%	1/4W	
R345	1-249-424-11	CARBON	3.9K	5%	1/4W	
R346	1-215-493-00	CARBON	1M	5%	1/4W	
R347	1-249-429-11	CARBON	10K	5%	1/4W	
R348	1-249-439-11	CARBON	68K	5%	1/4W	
R349	1-249-435-11	CARBON	33K	5%	1/4W	
R350	1-249-413-11	CARBON	470	5%	1/4W	
R351	1-249-435-11	CARBON	33K	5%	1/4W	
R352	1-249-437-11	CARBON	47K	5%	1/4W	
R353	1-249-434-11	CARBON	27K	5%	1/4W	
R354	1-249-421-11	CARBON	2.2K	5%	1/4W	
R355	1-249-434-11	CARBON	27K	5%	1/4W	
R356	1-249-433-11	CARBON	22K	5%	1/4W	
R357	1-249-429-11	CARBON	10K	5%	1/4W	
R358	1-215-493-00	CARBON	1M	5%	1/4W	
R359	1-249-415-11	CARBON	680	5%	1/4W	
R360	1-215-493-00	CARBON	1M	5%	1/4W	
R361	1-249-415-11	CARBON	680	5%	1/4W	
R362	1-249-421-11	CARBON	2.2K	5%	1/4W	
R363	1-249-429-11	CARBON	10K	5%	1/4W	
R364	1-249-417-11	CARBON	1K	5%	1/4W	
R365	1-249-441-11	CARBON	100K	5%	1/4W	
R366	1-249-409-11	CARBON	220	5%	1/4W	
R367	1-249-409-11	CARBON	220	5%	1/4W	
R369	1-249-429-11	CARBON	10K	5%	1/4W	
R370	1-249-409-11	CARBON	220	5%	1/4W	
R371	1-249-409-11	CARBON	220	5%	1/4W	
R372	1-249-429-11	CARBON	10K	5%	1/4W	
R374	1-249-424-11	CARBON	3.9K	5%	1/4W	
R375	1-249-415-11	CARBON	680	5%	1/4W	
R377	1-249-429-11	CARBON	10K	5%	1/4W	
R378	1-249-429-11	CARBON	10K	5%	1/4W	
R381	1-249-429-11	CARBON	10K	5%	1/4W	
R382	1-215-455-00	METAL	27K	1%	1/6W	
R383	1-215-462-00	METAL	51K	1%	1/6W	
R403	1-249-421-11	CARBON	2.2K	5%	1/4W	
R404	1-249-402-11	CARBON	56	5%	1/4W	
R407	1-249-421-11	CARBON	2.2K	5%	1/4W	
R408	1-249-402-11	CARBON	56	5%	1/4W	
R411	1-249-421-11	CARBON	2.2K	5%	1/4W	
R412	1-249-402-11	CARBON	56	5%	1/4W	
R413	1-249-428-11	CARBON	8.2K	5%	1/4W	
R414	1-249-421-11	CARBON	2.2K	5%	1/4W	
R415	1-249-405-11	CARBON	100	5%	1/4W	
R416	1-249-395-11	CARBON	15	5%	1/4W	
R417	1-249-408-11	CARBON	180	5%	1/4W	
R418	1-249-411-11	CARBON	330	5%	1/4W	
R419	1-249-429-11	CARBON	10K	5%	1/4W	
R420	1-249-431-11	CARBON	15K	5%	1/4W	
R421	1-249-429-11	CARBON	10K	5%	1/4W	
R422	1-249-437-11	CARBON	47K	5%	1/4W	
R423	1-249-417-11	CARBON	1K	5%	1/4W	
R424	1-249-423-11	CARBON	3.3K	5%	1/4W	
R425	1-249-418-11	CARBON	1.2K	5%	1/4W	
R428	1-247-883-00	CARBON	150K	5%	1/4W	
R429	1-249-431-11	CARBON	15K	5%	1/4W	
R430	1-249-425-11	CARBON	4.7K	5%	1/4W	
R431	1-249-437-11	CARBON	47K	5%	1/4W	
R432	1-249-431-11	CARBON	15K	5%	1/4W	
R433	1-249-437-11	CARBON	47K	5%	1/4W	
R434	1-249-430-11	CARBON	12K	5%	1/4W	
R435	1-249-423-11	CARBON	3.3K	5%	1/4W	
R436	1-249-428-11	CARBON	8.2K	5%	1/4W	
R437	1-215-493-00	CARBON	1M	5%	1/4W	
R438	1-249-429-11	CARBON	10K	5%	1/4W	
R439	1-249-438-11	CARBON	56K	5%	1/4W	
R440	1-249-429-11	CARBON	10K	5%	1/4W	
R441	1-249-430-11	CARBON	12K	5%	1/4W	
R442	1-249-441-11	CARBON	100K	5%	1/4W	
R443	1-249-434-11	CARBON	27K	5%	1/4W	
R444	1-249-405-11	CARBON	100	5%	1/4W	
R445	1-249-428-11	CARBON	8.2K	5%	1/4W	
R446	1-215-493-00	CARBON	1M	5%	1/4W	
R447	1-249-438-11	CARBON	56K	5%	1/4W	
R448	1-249-441-11	CARBON	100K	5%	1/4W	
R449	1-249-429-11	CARBON	10K	5%	1/4W	
R450	1-249-433-11	CARBON	22K	5%	1/4W	
R451	1-249-429-11	CARBON	10K	5%	1/4W	
R452	1-249-425-11	CARBON	4.7K	5%	1/4W	
R453	1-249-417-11	CARBON	1K	5%	1/4W	
R454	1-249-429-11	CARBON	10K	5%	1/4W	
R455	1-215-493-00	CARBON	1M	5%	1/4W	
R456	1-249-425-11	CARBON	4.7K	5%	1/4W	
R457	1-249-433-11	CARBON	22K	5%	1/4W	
R458	1-249-427-11	CARBON	6.8K	5%	1/4W	
R459	1-249-417-11	CARBON	1K	5%	1/4W	
R460	1-249-405-11	CARBON	100	5%	1/4W	
R464	1-215-447-00	METAL	12K	1%	1/6W	
R465	1-249-437-11	CARBON	47K	5%	1/4W	
R466	1-249-433-11	CARBON	22K	5%	1/4W	
R467	1-215-449-00	METAL	15K	1%	1/6W	
R468	1-249-437-11	CARBON	47K	5%	1/4W	
R469	1-249-433-11	CARBON	22K	5%	1/4W	
R470	1-215-447-00	METAL	12K	1%	1/6W	
R471	1-249-437-11	CARBON	47K	5%	1/4W	
R472	1-249-433-11	CARBON	22K	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R501	1-247-883-00	CARBON	150K	5%	1/4W	
R551	1-247-883-00	CARBON	150K	5%	1/4W	
R601	1-247-883-00	CARBON	150K	5%	1/4W	
R602	1-249-405-11	CARBON	100	5%	1/4W	
R701	1-249-417-11	CARBON	1K	5%	1/4W	
R702	1-249-417-11	CARBON	1K	5%	1/4W	
R703	1-249-417-11	CARBON	1K	5%	1/4W	
R704	1-249-417-11	CARBON	1K	5%	1/4W	
R705	1-249-417-11	CARBON	1K	5%	1/4W	
R706	1-249-429-11	CARBON	10K	5%	1/4W	
R707	1-249-429-11	CARBON	10K	5%	1/4W	
R708	1-249-431-11	CARBON	15K	5%	1/4W	
R709	1-249-417-11	CARBON	1K	5%	1/4W	
R710	1-249-417-11	CARBON	1K	5%	1/4W	
R711	1-249-417-11	CARBON	1K	5%	1/4W	
R712	1-249-417-11	CARBON	1K	5%	1/4W	
R713	1-249-417-11	CARBON	1K	5%	1/4W	
R714	1-249-417-11	CARBON	1K	5%	1/4W	
R715	1-249-417-11	CARBON	1K	5%	1/4W	
R716	1-249-417-11	CARBON	1K	5%	1/4W	
R717	1-249-417-11	CARBON	1K	5%	1/4W	
R803	1-249-429-11	CARBON	10K	5%	1/4W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV1	1-228-995-00	RES, ADJ, CARBON 22K	
RV2	1-228-995-00	RES, ADJ, CARBON 22K	
RV101	1-230-625-11	RES, ADJ, CARBON 330	
RV103	1-228-995-00	RES, ADJ, CARBON 22K	
RV301	1-228-995-00	RES, ADJ, CARBON 22K	
RV302	1-228-995-00	RES, ADJ, CARBON 22K	
RV303	1-230-626-41	RES, ADJ, CARBON 470	
RV304	1-228-995-00	RES, ADJ, CARBON 22K	
RV305	1-228-995-00	RES, ADJ, CARBON 22K	
RV306	1-228-995-00	RES, ADJ, CARBON 22K	
RV401	1-230-630-11	RES, ADJ, CARBON 10K	
RV402	1-230-633-41	RES, ADJ, CARBON 47K	
RV403	1-230-630-11	RES, ADJ, CARBON 10K	
RV404	1-228-995-00	RES, ADJ, CARBON 22K	
RV701	1-230-145-00	RES, VAR, CARBON 5K	
RV702	1-230-145-00	RES, VAR, CARBON 5K	
RV703	1-230-145-00	RES, VAR, CARBON 5K	
RV704	1-230-145-00	RES, VAR, CARBON 5K	
RV705	1-228-578-00	RES, VAR, CARBON 10K	
RV706	1-228-578-00	RES, VAR, CARBON 10K	
RV707	1-228-937-00	RES, VAR, CARBON 20K	
RV708	1-230-629-41	RES, ADJ, CARBON 3.3K	
RV709	1-228-995-00	RES, ADJ, CARBON 22K	
RV710	1-228-995-00	RES, ADJ, CARBON 22K	
RV711	1-228-995-00	RES, ADJ, CARBON 22K	
RV712	1-228-995-00	RES, ADJ, CARBON 22K	
RV713	1-228-995-00	RES, ADJ, CARBON 22K	
RV714	1-228-995-00	RES, ADJ, CARBON 22K	
RV715	1-228-995-00	RES, ADJ, CARBON 22K	
RV716	1-228-995-00	RES, ADJ, CARBON 22K	
RV717	1-228-995-00	RES, ADJ, CARBON 22K	

SWITCH

Ref.No.	Part No.	Description	Remark
S401	1-553-716-00	SWITCH, SLIDE	
S701	1-514-633-00	SLIDE SWITCH	
	9-911-838-XX	SHEET; S701	
S702	1-553-716-00	SWITCH, SLIDE	

TRANSFORMER

Ref.No.	Part No.	Description	Remark
T301	1-425-786-00	TRANSFORMER, BANDPASS(BPT)	
T302	1-404-081-00	TRANSFOMER, DELAY ADJUST	
T401	1-404-146-00	TRANSFORMER	

CRYSTAL

Ref.No.	Part No.	Description	Remark
X301	1-567-504-11	OSCILLATOR, CRYSTAL	
X302	1-567-505-11	OSCILLATOR, CRYSTAL	

****

Ref.No.	Part No.	Description	Remark
	*1-617-535-11	BC BOARD ********	
	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P	
	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	

CAPACITOR

Ref.No.	Part No.	Description				Remark
C10	1-124-462-00	ELECT	10MF	20%	16V	
C11	1-124-259-00	ELECT	4.7MF	20%	50V	
C12	1-102-973-00	CERAMIC	100PF	5%	50V	
C13	1-102-820-00	CERAMIC	330PF	5%	50V	
C14	1-124-462-00	ELECT	10MF	20%	16V	
C15	1-136-165-00	FILM	0.1MF	5%	50V	
C16	1-161-021-11	CERAMIC	0.047MF	10%	25V	
C17	1-102-824-00	CERAMIC	470PF	5%	50V	
C18	1-102-824-00	CERAMIC	470PF	5%	50V	
C19	1-102-820-00	CERAMIC	330PF	5%	50V	
C20	1-102-824-00	CERAMIC	470PF	5%	50V	
C22	1-124-462-00	ELECT	10MF	20%	16V	
C25	1-123-611-00	ELECT	1MF	20%	50V	
C27	1-123-611-00	ELECT	1MF	20%	50V	
C28	1-136-165-00	FILM	0.1MF	5%	50V	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-208-67	IC CX867	

RESISTOR

Ref.No.	Part No.	Description				Remark
R43	1-249-439-11	CARBON	68K	5%	1/4W	
R44	1-247-883-00	CARBON	150K	5%	1/4W	
R45	1-249-441-11	CARBON	100K	5%	1/4W	
R46	1-249-421-11	CARBON	2.2K	5%	1/4W	
R47	1-249-415-11	CARBON	680	5%	1/4W	
R48	1-247-881-00	CARBON	120K	5%	1/4W	
R49	1-247-895-00	CARBON	470K	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R50	1-249-430-11	CARBON	12K	5%	1/4W	
R51	1-249-418-11	CARBON	1.2K	5%	1/4W	
R52	1-249-436-11	CARBON	39K	5%	1/4W	
R53	1-249-418-11	CARBON	1.2K	5%	1/4W	
R54	1-249-441-11	CARBON	100K	5%	1/4W	
R55	1-249-418-11	CARBON	1.2K	5%	1/4W	
R56	1-249-405-11	CARBON	100	5%	1/4W	
R57	1-249-405-11	CARBON	100	5%	1/4W	
R62	1-249-405-11	CARBON	100	5%	1/4W	
R63	1-249-433-11	CARBON	22K	5%	1/4W	

****

*1-617-536-11 BD BOARD
****

CONNECTOR

Ref.No.	Part No.	Description
BD1	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P
BD2	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P

CAPACITOR

Ref.No.	Part No.	Description			
C136	1-123-611-00	ELECT	1MF	20%	50V
C137	1-161-021-11	CERAMIC	0.047MF	10%	25V
C138	1-124-236-00	ELECT	47MF	20%	16V
C139	1-123-611-00	ELECT	1MF	20%	50V
C140	1-123-611-00	ELECT	1MF	20%	50V
C141	1-161-021-11	CERAMIC	0.047MF	10%	25V
C142	1-124-236-00	ELECT	47MF	20%	16V
C143	1-102-949-00	CERAMIC	12PF	5%	50V

DIODE

Ref.No.	Part No.	Description
D108	8-719-911-19	DIODE 1SS119

IC

Ref.No.	Part No.	Description
IC102	8-759-014-96	IC MC1496P

TRANSISTOR

Ref.No.	Part No.	Description
Q152	8-729-603-50	TRANSISTOR 2SC403SP
Q153	8-729-384-46	TRANSISTOR 2SA844-C
Q154	8-729-603-50	TRANSISTOR 2SC403SP
Q155	8-729-384-46	TRANSISTOR 2SA844-C

RESISTOR

Ref.No.	Part No.	Description				Remark
R242	1-249-405-11	CARBON	100	5%	1/4W	
R243	1-249-421-11	CARBON	2.2K	5%	1/4W	
R244	1-249-415-11	CARBON	680	5%	1/4W	
R245	1-249-405-11	CARBON	100	5%	1/4W	
R246	1-249-422-11	CARBON	2.7K	5%	1/4W	
R247	1-249-415-11	CARBON	680	5%	1/4W	
R248	1-249-430-11	CARBON	12K	5%	1/4W	
R249	1-215-475-00	METAL	180K	1%	1/6W	
R250	1-215-409-00	METAL	330	1%	1/6W	
R251	1-215-469-00	METAL	100K	1%	1/6W	
R252	1-215-451-00	METAL	18K	1%	1/6W	
R253	1-215-453-00	METAL	22K	1%	1/6W	
R254	1-249-415-11	CARBON	680	5%	1/4W	
R255	1-249-405-11	CARBON	100	5%	1/4W	
R256	1-249-417-11	CARBON	1K	5%	1/4W	
R258	1-249-421-11	CARBON	2.2K	5%	1/4W	
R259	1-249-427-11	CARBON	6.8K	5%	1/4W	
R260	1-249-419-11	CARBON	1.5K	5%	1/4W	
R261	1-249-405-11	CARBON	100	5%	1/4W	
R262	1-249-420-11	CARBON	1.8K	5%	1/4W	
R263	1-249-428-11	CARBON	8.2K	5%	1/4W	
R276	1-215-469-00	METAL	100K	1%	1/6W	

****

*1-617-537-11 BE BOARD
****

CONNECTOR

Ref.No.	Part No.	Description
BE1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P
BE2	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P

CAPACITOR

Ref.No.	Part No.	Description			
C29	1-102-973-00	CERAMIC	100PF	5%	50V
C30	1-102-116-00	CERAMIC	680PF	10%	50V
C31	1-161-021-11	CERAMIC	0.047MF	10%	25V
C32	1-124-236-00	ELECT	47MF	20%	16V
C33	1-102-973-00	CERAMIC	100PF	5%	50V
C34	1-124-236-00	ELECT	47MF	20%	16V
C35	1-161-021-11	CERAMIC	0.047MF	10%	25V

DIODE

Ref.No.	Part No.	Description
D3	8-719-911-19	DIODE 1SS119
D4	8-719-911-19	DIODE 1SS119

IC

Ref.No.	Part No.	Description
IC2	8-759-914-03	IC SN74LS06N
IC3	8-759-240-24	IC TC4024BP
IC4	8-759-979-16	IC CX7916
IC5	8-759-345-38	IC HD14538BP

TRANSISTOR

Ref.No.	Part No.	Description
Q20	8-729-178-54	TRANSISTOR 2SC2785
Q21	8-729-178-54	TRANSISTOR 2SC2785
Q22	8-729-178-54	TRANSISTOR 2SC2785
Q23	8-729-900-89	TRANSISTOR DTC144ES
Q24	8-729-900-89	TRANSISTOR DTC144ES
Q25	8-729-178-54	TRANSISTOR 2SC2785
Q26	8-729-900-89	TRANSISTOR DTC144ES

RESISTOR

Ref.No.	Part No.	Description			
R64	1-249-433-11	CARBON	22K	5%	1/4W
R65	1-249-430-11	CARBON	12K	5%	1/4W

Ref.No.	Part No.	Description			Remark
R66	1-249-433-11	CARBON	22K 5%	1/4W	
R67	1-249-429-11	CARBON	10K 5%	1/4W	
R68	1-249-433-11	CARBON	22K 5%	1/4W	
R69	1-215-444-00	METAL	9.1K 1%	1/6W	
R70	1-249-430-11	CARBON	12K 5%	1/4W	
R71	1-249-433-11	CARBON	22K 5%	1/4W	
R72	1-249-429-11	CARBON	10K 5%	1/4W	
R73	1-249-441-11	CARBON	100K 5%	1/4W	
R75	1-249-429-11	CARBON	10K 5%	1/4W	
R77	1-249-439-11	CARBON	68K 5%	1/4W	
R78	1-249-409-11	CARBON	220 5%	1/4W	
R79	1-249-433-11	CARBON	22K 5%	1/4W	
R80	1-249-433-11	CARBON	22K 5%	1/4W	
R82	1-215-444-00	METAL	9.1K 1%	1/6W	
R83	1-249-430-11	CARBON	12K 5%	1/4W	
R86	1-249-430-11	CARBON	12K 5%	1/4W	
R379	1-249-421-11	CARBON	2.2K 5%	1/4W	
R380	1-249-419-11	CARBON	1.5K 5%	1/4W	

****

*1-617-538-11 BF BOARD
****

CONNECTOR

Ref.No.	Part No.	Description
BF1	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P
BF2	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P

CAPACITOR

Ref.No.	Part No.	Description			
C36	1-101-361-00	CERAMIC	150PF	5%	50V
C37	1-102-973-00	CERAMIC	100PF	5%	50V
C38	1-101-004-00	CERAMIC	0.01MF		50V
C39	1-101-361-00	CERAMIC	150PF	5%	50V
C40	1-102-973-00	CERAMIC	100PF	5%	50V
C41	1-102-973-00	CERAMIC	100PF	5%	50V
C42	1-101-004-00	CERAMIC	0.01MF		50V

DIODE

Ref.No.	Part No.	Description
D5	8-719-911-19	DIODE 1SS119
D6	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D8	8-719-911-19	DIODE 1SS119
D9	8-719-911-19	DIODE 1SS119
D10	8-719-911-19	DIODE 1SS119

IC

Ref.No.	Part No.	Description
IC6	8-759-240-01	IC TC4001BP
IC7	8-759-045-38	IC MC14538BCP
IC8	8-759-045-38	IC MC14538BCP

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q28	8-729-178-54	TRANSISTOR 2SC2785	
Q29	8-729-178-54	TRANSISTOR 2SC2785	
Q30	8-729-178-54	TRANSISTOR 2SC2785	

RESISTOR

Ref.No.	Part No.	Description			
R87	1-249-417-11	CARBON	1K	5%	1/4W
R88	1-249-417-11	CARBON	1K	5%	1/4W
R89	1-215-455-00	METAL	27K	1%	1/6W
R90	1-215-443-00	METAL	8.2K	1%	1/6W
R91	1-249-417-11	CARBON	1K	5%	1/4W
R92	1-215-493-00	CARBON	1M	5%	1/4W
R93	1-249-433-11	CARBON	22K	5%	1/4W
R94	1-249-421-11	CARBON	2.2K	5%	1/4W
R95	1-249-430-11	CARBON	12K	5%	1/4W
R96	1-249-430-11	CARBON	12K	5%	1/4W
R97	1-215-443-00	METAL	8.2K	1%	1/6W
R98	1-247-849-00	CARBON	5.6K	5%	1/4W
R99	1-215-445-00	METAL	10K	1%	1/6W
R100	1-215-445-00	METAL	10K	1%	1/6W
R801	1-215-493-00	CARBON	1M	5%	1/4W
R802	1-215-445-00	METAL	10K	1%	1/6W

VARIABLE RESISTOR

Ref.No.	Part No.	Description
RV3	1-228-311-00	RES, ADJ, CERMET 100K
RV4	1-228-310-00	RES, ADJ, CERMET 50K
RV5	1-228-309-00	RES, ADJ, CERMET 20K
RV6	1-228-310-00	RES, ADJ, CERMET 50K

****

*A-1135-433-A BB BOARD, COMPLETE
****

CONNECTOR

Ref.No.	Part No.	Description
BB1	*1-566-058-11	PIN, CONNECTOR 6P
BB2	*1-566-056-11	PIN, CONNECTOR 4P
BB3	*1-566-055-11	PIN, CONNECTOR 3P
BB4	*1-566-055-11	PIN, CONNECTOR 3P
BB5	*1-566-055-11	PIN, CONNECTOR 3P
BB6	*1-566-056-11	PIN, CONNECTOR 4P
BB7	*1-566-057-11	PIN, CONNECTOR 5P
BB8	*1-566-056-11	PIN, CONNECTOR 4P
BB9	*1-566-061-11	PIN, CONNECTOR 9P
BB10	*1-566-060-11	PIN, CONNECTOR 8P
BB11	*1-566-055-11	PIN, CONNECTOR 3P
BB12	*1-566-058-11	PIN, CONNECTOR 6P
BB13	*1-566-059-11	PIN, CONNECTOR 7P
BB14	*1-566-058-11	PIN, CONNECTOR 6P
BB15	*1-566-059-11	PIN, CONNECTOR 7P
BB16	*1-566-055-11	PIN, CONNECTOR 3P
BB17	*1-566-055-11	PIN, CONNECTOR 3P
BB18	*1-566-055-11	PIN, CONNECTOR 3P

CAPACITOR

Ref.No.	Part No.	Description			
C13	1-124-462-00	ELECT	10MF	20%	16V

BB

Ref.No.	Part No.	Description			Remark	Ref.No.	Part No.	Description			Remark
C14	1-124-462-00	ELECT	10MF	20%	16V	C236	1-101-004-00	CERAMIC	0.01MF		50V
C15	1-124-462-00	ELECT	10MF	20%	16V	C237	1-161-021-11	CERAMIC	0.047MF	10%	25V
C16	1-101-004-00	CERAMIC	0.01MF		50V	C238	1-101-004-00	CERAMIC	0.01MF		50V
C17	1-123-611-00	ELECT	1MF	20%	50V	C239	1-136-165-00	FILM	0.1MF	5%	50V
C18	1-101-004-00	CERAMIC	0.01MF		50V	C240	1-102-973-00	CERAMIC	100PF	5%	50V
C19	1-161-021-11	CERAMIC	0.047MF	10%	25V	C241	1-161-021-11	CERAMIC	0.047MF	10%	25V
C20	1-123-333-00	ELECT	100MF	20%	16V	C242	1-101-004-00	CERAMIC	0.01MF		50V
C21	1-124-465-00	ELECT	0.47MF	20%	50V	C243	1-101-004-00	CERAMIC	0.01MF		50V
C22	1-123-611-00	ELECT	1MF	20%	50V	C244	1-101-004-00	CERAMIC	0.01MF		50V
C23	1-124-465-00	ELECT	0.47MF	20%	50V	C245	1-101-004-00	CERAMIC	0.01MF		50V
C24	1-123-611-00	ELECT	1MF	20%	50V	C401	1-102-959-00	CERAMIC	22PF	10%	50V
C25	1-124-465-00	ELECT	0.47MF	20%	50V	C402	1-124-236-00	ELECT	47MF	20%	16V
C26	1-101-004-00	CERAMIC	0.01MF		50V	C403	1-123-611-00	ELECT	1MF	20%	50V
C27	1-123-611-00	ELECT	1MF	20%	50V	C404	1-101-004-00	CERAMIC	0.01MF		50V
C28	1-124-236-00	ELECT	47MF	20%	16V	C405	1-124-462-00	ELECT	10MF	20%	16V
C29	1-101-004-00	CERAMIC	0.01MF		50V	C406	1-124-462-00	ELECT	10MF	20%	16V
C30	1-124-236-00	ELECT	47MF	20%	16V	C407	1-136-165-00	FILM	0.1MF	5%	50V
C31	1-101-004-00	CERAMIC	0.01MF		50V	C408	1-124-462-00	ELECT	10MF	20%	16V
C32	1-124-236-00	ELECT	47MF	20%	16V	C409	1-101-004-00	CERAMIC	0.01MF		50V
C33	1-101-004-00	CERAMIC	0.01MF		50V	C410	1-161-021-11	CERAMIC	0.047MF	10%	25V
C201	1-123-611-00	ELECT	1MF	20%	50V	C411	1-101-004-00	CERAMIC	0.01MF		50V
C202	1-123-611-00	ELECT	1MF	20%	50V	C412	1-161-021-11	CERAMIC	0.047MF	10%	25V
C203	1-123-611-00	ELECT	1MF	20%	50V	C413	1-101-004-00	CERAMIC	0.01MF		50V
C204	1-123-611-00	ELECT	1MF	20%	50V	C414	1-123-611-00	ELECT	1MF	20%	50V
C205	1-101-004-00	CERAMIC	0.01MF		50V	C415	1-161-021-11	CERAMIC	0.047MF	10%	25V
C206	1-102-973-00	CERAMIC	100PF	5%	50V	C419	1-161-021-11	CERAMIC	0.047MF	10%	25V
C207	1-161-021-11	CERAMIC	0.047MF	10%	25V	C501	1-102-959-00	CERAMIC	22PF	10%	50V
C208	1-123-333-00	ELECT	100MF	20%	16V	C502	1-124-236-00	ELECT	47MF	20%	16V
C209	1-124-462-00	ELECT	10MF	20%	16V	C503	1-123-611-00	ELECT	1MF	20%	50V
C210	1-161-021-11	CERAMIC	0.047MF	10%	25V	C504	1-101-004-00	CERAMIC	0.01MF		50V
C211	1-124-462-00	ELECT	10MF	20%	16V	C505	1-124-462-00	ELECT	10MF	20%	16V
C212	1-123-611-00	ELECT	1MF	20%	50V	C506	1-124-462-00	ELECT	10MF	20%	16V
C213	1-161-021-11	CERAMIC	0.047MF	10%	25V	C507	1-136-165-00	FILM	0.1MF	5%	50V
C216	1-124-462-00	ELECT	10MF	20%	16V	C508	1-124-462-00	ELECT	10MF	20%	16V
C217	1-124-463-00	ELECT	0.1MF	20%	50V	C509	1-101-004-00	CERAMIC	0.01MF		50V
C218	1-124-462-00	ELECT	10MF	20%	16V	C510	1-161-021-11	CERAMIC	0.047MF	10%	25V
C219	1-123-611-00	ELECT	1MF	20%	50V	C511	1-101-004-00	CERAMIC	0.01MF		50V
C220	1-101-004-00	CERAMIC	0.01MF		50V	C512	1-161-021-11	CERAMIC	0.047MF	10%	25V
C221	1-101-004-00	CERAMIC	0.01MF		50V	C513	1-101-004-00	CERAMIC	0.01MF		50V
C222	1-101-004-00	CERAMIC	0.01MF		50V	C514	1-123-611-00	ELECT	1MF	20%	50V
C223	1-124-463-00	ELECT	0.1MF	20%	50V	C515	1-161-021-11	CERAMIC	0.047MF	10%	25V
C224	1-124-462-00	ELECT	10MF	20%	16V	C519	1-161-021-11	CERAMIC	0.047MF	10%	25V
C225	1-123-611-00	ELECT	1MF	20%	50V	C601	1-102-959-00	CERAMIC	22PF	10%	50V
C226	1-101-004-00	CERAMIC	0.01MF		50V	C602	1-124-236-00	ELECT	47MF	20%	16V
C227	1-101-004-00	CERAMIC	0.01MF		50V	C603	1-123-611-00	ELECT	1MF	20%	50V
C228	1-101-004-00	CERAMIC	0.01MF		50V	C604	1-101-004-00	CERAMIC	0.01MF		50V
C229	1-124-463-00	ELECT	0.1MF	20%	50V	C605	1-124-462-00	ELECT	10MF	20%	16V
C230	1-124-462-00	ELECT	10MF	20%	16V	C606	1-124-462-00	ELECT	10MF	20%	16V
C231	1-123-611-00	ELECT	1MF	20%	50V	C607	1-136-165-00	FILM	0.1MF	5%	50V
C232	1-101-004-00	CERAMIC	0.01MF		50V	C608	1-124-462-00	ELECT	10MF	20%	16V
C233	1-101-004-00	CERAMIC	0.01MF		50V	C609	1-101-004-00	CERAMIC	0.01MF		50V
C234	1-101-004-00	CERAMIC	0.01MF		50V	C610	1-161-021-11	CERAMIC	0.047MF	10%	25V
C235	1-123-611-00	ELECT	1MF	20%	50V	C611	1-101-004-00	CERAMIC	0.01MF		50V

Ref.No.	Part No.	Description			Remark
C612	1-161-021-11	CERAMIC	0.047MF	10%	25V
C613	1-101-004-00	CERAMIC	0.01MF		50V
C614	1-123-611-00	ELECT	1MF	20%	50V
C615	1-161-021-11	CERAMIC	0.047MF	10%	25V
C616	1-123-611-00	ELECT	1MF	20%	50V
C617	1-123-611-00	ELECT	1MF	20%	50V
C618	1-123-611-00	ELECT	1MF	20%	50V
C619	1-161-021-11	CERAMIC	0.047MF	10%	25V
C705	1-123-611-00	ELECT	1MF	20%	50V
C706	1-101-004-00	CERAMIC	0.01MF		50V
C710	1-102-973-00	CERAMIC	100PF	5%	50V
C711	1-124-245-00	ELECT	4.7MF	20%	25V
C712	1-101-004-00	CERAMIC	0.01MF		50V
C713	1-123-611-00	ELECT	1MF	20%	50V
C714	1-102-973-00	CERAMIC	100PF	5%	50V
C715	1-102-824-00	CERAMIC	470PF	5%	50V
C901	1-123-611-00	ELECT	1MF	20%	50V
C902	1-161-021-11	CERAMIC	0.047MF	10%	25V
C903	1-124-462-00	ELECT	10MF	20%	16V
C904	1-124-236-00	ELECT	47MF	20%	16V
C906	1-161-021-11	CERAMIC	0.047MF	10%	25V
C907	1-124-236-00	ELECT	47MF	20%	16V
C908	1-161-021-11	CERAMIC	0.047MF	10%	25V
C909	1-161-021-11	CERAMIC	0.047MF	10%	25V
C910	1-124-236-00	ELECT	47MF	20%	16V
C911	1-161-021-11	CERAMIC	0.047MF	10%	25V
C912	1-161-021-11	CERAMIC	0.047MF	10%	25V
C913	1-124-236-00	ELECT	47MF	20%	16V
C931	1-161-021-11	CERAMIC	0.047MF	10%	25V
C932	1-124-462-00	ELECT	10MF	20%	16V
C933	1-124-236-00	ELECT	47MF	20%	16V
C934	1-124-236-00	ELECT	47MF	20%	16V
C935	1-124-236-00	ELECT	47MF	20%	16V
C936	1-124-236-00	ELECT	47MF	20%	16V
C937	1-124-236-00	ELECT	47MF	20%	16V
C938	1-124-236-00	ELECT	47MF	20%	16V
C939	1-124-236-00	ELECT	47MF	20%	16V
C940	1-161-021-11	CERAMIC	0.047MF	10%	25V
C941	1-161-021-11	CERAMIC	0.047MF	10%	25V
C942	1-161-021-11	CERAMIC	0.047MF	10%	25V
C943	1-161-021-11	CERAMIC	0.047MF	10%	25V
C944	1-161-021-11	CERAMIC	0.047MF	10%	25V
C945	1-161-021-11	CERAMIC	0.047MF	10%	25V
C946	1-161-021-11	CERAMIC	0.047MF	10%	25V
C961	1-123-611-00	ELECT	1MF	20%	50V
C962	1-161-021-11	CERAMIC	0.047MF	10%	25V
C963	1-124-462-00	ELECT	10MF	20%	16V
C964	1-124-236-00	ELECT	47MF	20%	16V
C965	1-124-236-00	ELECT	47MF	20%	16V
C966	1-124-236-00	ELECT	47MF	20%	16V
C967	1-124-236-00	ELECT	47MF	20%	16V
C968	1-161-021-11	CERAMIC	0.047MF	10%	25V
C969	1-161-021-11	CERAMIC	0.047MF	10%	25V

Ref.No.	Part No.	Description			Remark
C970	1-161-021-11	CERAMIC	0.047MF	10%	25V
		DIODE			
D201	8-719-911-19	DIODE 1SS119			
D202	8-719-911-19	DIODE 1SS119			
D203	8-719-101-70	DIODE RD8.2E-L2			
D204	8-719-101-70	DIODE RD8.2E-L2			
D205	8-719-101-70	DIODE RD8.2E-L2			
D206	8-719-911-19	DIODE 1SS119			
D207	8-719-911-19	DIODE 1SS119			
D208	8-719-911-19	DIODE 1SS119			
D209	8-719-101-70	DIODE RD8.2E-L2			
D210	8-719-102-94	DIODE RD11E-N2			
D211	8-719-911-19	DIODE 1SS119			
D401	8-719-911-19	DIODE 1SS119			
D402	8-719-911-19	DIODE 1SS119			
D501	8-719-911-19	DIODE 1SS119			
D502	8-719-911-19	DIODE 1SS119			
D601	8-719-911-19	DIODE 1SS119			
D602	8-719-911-19	DIODE 1SS119			
D701	8-719-911-19	DIODE 1SS119			
D702	8-719-911-19	DIODE 1SS119			
D703	8-719-911-19	DIODE 1SS119			
D704	8-719-911-19	DIODE 1SS119			
D705	8-719-911-19	DIODE 1SS119			
D706	8-719-911-19	DIODE 1SS119			
D708	8-719-911-19	DIODE 1SS119			
D709	8-719-911-19	DIODE 1SS119			
D710	8-719-911-19	DIODE 1SS119			
D711	8-719-911-19	DIODE 1SS119			
D901	8-719-812-41	DIODE TLR124			
D931	8-719-812-41	DIODE TLR124			
D961	8-719-812-41	DIODE TLR124			
		IC			
IC7	8-752-010-00	IC CX20100			
IC201	8-752-030-45	IC CXA1044P			
IC202	8-759-145-58	IC UPC4558C			
IC203	8-759-145-58	IC UPC4558C			
IC204	8-759-340-53	IC HD14053BP			
IC205	8-759-340-53	IC HD14053BP			
IC206	8-759-340-53	IC HD14053BP			
IC207	8-759-145-58	IC UPC4558C			
IC208	8-759-145-58	IC UPC4558C			
IC209	8-759-340-53	IC HD14053BP			
IC401	8-759-014-96	IC MC1496P			
IC402	8-759-340-53	IC HD14053BP			
IC403	8-759-145-58	IC UPC4558C			
IC501	8-759-014-96	IC MC1496P			
IC502	8-759-340-53	IC HD14053BP			
IC503	8-759-145-58	IC UPC4558C			
IC601	8-759-014-96	IC MC1496P			
IC602	8-759-340-53	IC HD14053BP			

BB

Ref.No.	Part No.	Description	Remark
IC603	8-759-145-58	IC UPC4558C	
IC604	8-759-145-58	IC UPC4558C	
IC702	8-759-103-93	IC UPC393C	
IC704	8-759-045-38	IC MC14538BCP	
IC706	8-759-133-90	IC UPC339C	
IC707	8-759-340-11	IC HD14011BP	
IC901	8-759-170-12	IC UPC78M12H	
IC931	8-759-170-12	IC UPC78M12H	
IC961	⚠8-759-700-24	IC NJM79M12A	

COIL

Ref.No.	Part No.	Description	Remark
L1	1-410-396-11	MICRO INDUCTOR 0.45UH	
L2	1-410-396-11	MICRO INDUCTOR 0.45UH	
L3	1-410-396-11	MICRO INDUCTOR 0.45UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q16	8-729-300-13	TRANSISTOR 2SC2471	
Q17	8-729-112-06	TRANSISTOR 2SA1206	
Q18	8-729-603-50	TRANSISTOR 2SC403SP	
Q19	8-729-300-13	TRANSISTOR 2SC2471	
Q20	8-729-112-06	TRANSISTOR 2SA1206	
Q21	8-729-603-50	TRANSISTOR 2SC403SP	
Q22	8-729-300-13	TRANSISTOR 2SC2471	
Q23	8-729-112-06	TRANSISTOR 2SA1206	
Q24	8-729-603-50	TRANSISTOR 2SC403SP	
Q25	8-729-384-46	TRANSISTOR 2SA844-C	
Q26	8-729-900-89	TRANSISTOR DTC144ES	
Q27	8-729-300-13	TRANSISTOR 2SC2471	
Q28	8-729-300-13	TRANSISTOR 2SC2471	
Q29	8-729-384-46	TRANSISTOR 2SA844-C	
Q30	8-729-900-89	TRANSISTOR DTC144ES	
Q31	8-729-300-13	TRANSISTOR 2SC2471	
Q32	8-729-300-13	TRANSISTOR 2SC2471	
Q33	8-729-384-46	TRANSISTOR 2SA844-C	
Q34	8-729-900-89	TRANSISTOR DTC144ES	
Q35	8-729-300-13	TRANSISTOR 2SC2471	
Q36	8-729-300-13	TRANSISTOR 2SC2471	
Q37	8-729-900-89	TRANSISTOR DTC144ES	
Q38	8-729-900-89	TRANSISTOR DTC144ES	
Q39	8-729-900-89	TRANSISTOR DTC144ES	
Q40	8-729-900-89	TRANSISTOR DTC144ES	
Q41	8-729-900-89	TRANSISTOR DTC144ES	
Q42	8-729-178-54	TRANSISTOR 2SC2785	
Q201	8-729-112-06	TRANSISTOR 2SA1206	
Q202	8-729-112-06	TRANSISTOR 2SA1206	
Q203	8-729-112-06	TRANSISTOR 2SA1206	
Q204	8-729-178-54	TRANSISTOR 2SC2785	
Q205	8-729-801-46	TRANSISTOR 2SC3064	
Q206	8-729-603-50	TRANSISTOR 2SC403SP	
Q207	8-729-300-13	TRANSISTOR 2SC2471 (BB BOARD 1-617-534-15 ONLY)	
	8-729-603-50	TRANSISTOR 2SC403SP (BB BOARD 1-617-534-16 ONLY)	
Q208	8-729-300-13	TRANSISTOR 2SC2471	
Q209	8-729-178-54	TRANSISTOR 2SC2785	
Q210	8-729-178-54	TRANSISTOR 2SC2785	
Q211	8-729-603-50	TRANSISTOR 2SC403SP	
Q212	8-729-300-13	TRANSISTOR 2SC2471 (BB BOARD 1-617-534-15 ONLY)	
	8-729-603-50	TRANSISTOR 2SC403SP (BB BOARD 1-617-534-16 ONLY)	
Q213	8-729-300-13	TRANSISTOR 2SC2471	
Q214	8-729-178-54	TRANSISTOR 2SC2785	
Q215	8-729-178-54	TRANSISTOR 2SC2785	
Q216	8-729-603-50	TRANSISTOR 2SC403SP	
Q217	8-729-300-13	TRANSISTOR 2SC2471 (BB BOARD 1-617-534-15 ONLY)	
	8-729-603-50	TRANSISTOR 2SC403SP (BB BOARD 1-617-534-16 ONLY)	
Q218	8-729-300-13	TRANSISTOR 2SC2471	
Q219	8-729-178-54	TRANSISTOR 2SC2785	
Q220	8-729-178-54	TRANSISTOR 2SC2785	
Q221	8-729-900-89	TRANSISTOR DTC144ES	
Q222	8-729-603-50	TRANSISTOR 2SC403SP	
Q223	8-729-603-50	TRANSISTOR 2SC403SP	
Q224	8-729-178-54	TRANSISTOR 2SC2785	
Q225	8-729-115-10	TRANSISTOR 2SK105A-10	
Q401	8-729-300-13	TRANSISTOR 2SC2471	
Q402	8-729-178-54	TRANSISTOR 2SC2785	
Q403	8-729-300-13	TRANSISTOR 2SC2471	
Q404	8-729-300-13	TRANSISTOR 2SC2471	
Q405	8-729-178-54	TRANSISTOR 2SC2785	
Q406	8-729-178-54	TRANSISTOR 2SC2785	
Q407	8-729-300-13	TRANSISTOR 2SC2471	
Q408	8-729-112-06	TRANSISTOR 2SA1206	
Q409	8-729-384-46	TRANSISTOR 2SA844-C	
Q410	8-729-178-54	TRANSISTOR 2SC2785	
Q411	8-729-801-46	TRANSISTOR 2SC3064	
Q412	8-729-801-46	TRANSISTOR 2SC3064	
Q413	8-729-803-37	TRANSISTOR 2SA1237	
Q414	8-729-801-46	TRANSISTOR 2SC3064	
Q501	8-729-300-13	TRANSISTOR 2SC2471	
Q502	8-729-178-54	TRANSISTOR 2SC2785	
Q503	8-729-300-13	TRANSISTOR 2SC2471	
Q504	8-729-300-13	TRANSISTOR 2SC2471	
Q505	8-729-178-54	TRANSISTOR 2SC2785	
Q506	8-729-178-54	TRANSISTOR 2SC2785	
Q507	8-729-300-13	TRANSISTOR 2SC2471	
Q508	8-729-112-06	TRANSISTOR 2SA1206	
Q509	8-729-384-46	TRANSISTOR 2SA844-C	
Q510	8-729-178-54	TRANSISTOR 2SC2785	
Q511	8-729-801-46	TRANSISTOR 2SC3064	
Q512	8-729-801-46	TRANSISTOR 2SC3064	
Q513	8-729-803-37	TRANSISTOR 2SA1237	
Q514	8-729-801-46	TRANSISTOR 2SC3064	
Q601	8-729-300-13	TRANSISTOR 2SC2471	
Q602	8-729-178-54	TRANSISTOR 2SC2785	
Q603	8-729-300-13	TRANSISTOR 2SC2471	
Q604	8-729-300-13	TRANSISTOR 2SC2471	
Q605	8-729-178-54	TRANSISTOR 2SC2785	
Q606	8-729-178-54	TRANSISTOR 2SC2785	
Q607	8-729-300-13	TRANSISTOR 2SC2471	
Q608	8-729-112-06	TRANSISTOR 2SA1206	
Q609	8-729-384-46	TRANSISTOR 2SA844-C	
Q610	8-729-178-54	TRANSISTOR 2SC2785	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
Q611	8-729-801-46	TRANSISTOR 2SC3064	
Q612	8-729-801-46	TRANSISTOR 2SC3064	
Q613	8-729-803-37	TRANSISTOR 2SA1237	
Q614	8-729-801-46	TRANSISTOR 2SC3064	
Q615	8-729-384-46	TRANSISTOR 2SA844-C	
Q616	8-729-801-46	TRANSISTOR 2SC3064	
Q706	8-729-117-54	TRANSISTOR 2SA1175	
Q707	8-729-178-54	TRANSISTOR 2SC2785	
Q710	8-729-178-54	TRANSISTOR 2SC2785	
Q711	8-729-178-54	TRANSISTOR 2SC2785	
Q712	8-729-178-54	TRANSISTOR 2SC2785	
Q720	8-729-178-54	TRANSISTOR 2SC2785	
Q721	8-729-900-89	TRANSISTOR DTC144ES	
Q722	8-729-900-89	TRANSISTOR DTC144ES	
Q723	8-729-178-54	TRANSISTOR 2SC2785	
Q724	8-729-117-54	TRANSISTOR 2SA1175	
Q810	8-729-900-89	TRANSISTOR DTC144ES	
		RESISTOR	
R61	1-249-429-11	CARBON 10K 5% 1/4W	
R62	1-249-441-11	CARBON 100K 5% 1/4W	
R63	1-249-417-11	CARBON 1K 5% 1/4W	
R64	1-249-429-11	CARBON 10K 5% 1/4W	
R65	1-249-428-11	CARBON 8.2K 5% 1/4W	
R66	1-249-432-11	CARBON 18K 5% 1/4W	
R67	1-249-429-11	CARBON 10K 5% 1/4W	
R68	1-249-439-11	CARBON 68K 5% 1/4W	
R69	1-249-431-11	CARBON 15K 5% 1/4W	
R70	1-249-437-11	CARBON 47K 5% 1/4W	
R71	1-249-421-11	CARBON 2.2K 5% 1/4W	
R72	1-249-429-11	CARBON 10K 5% 1/4W	
R73	1-249-405-11	CARBON 100 5% 1/4W	
R74	1-249-405-11	CARBON 100 5% 1/4W	
R75	1-249-405-11	CARBON 100 5% 1/4W	
R76	1-249-405-11	CARBON 100 5% 1/4W	
R77	1-249-405-11	CARBON 100 5% 1/4W	
R78	1-215-462-00	CARBON 51K 5% 1/4W	
R79	1-249-427-11	CARBON 6.8K 5% 1/4W	
R80	1-215-462-00	CARBON 51K 5% 1/4W	
R81	1-249-427-11	CARBON 6.8K 5% 1/4W	
R82	1-249-417-11	CARBON 1K 5% 1/4W	
R83	1-249-430-11	CARBON 12K 5% 1/4W	
R84	1-249-431-11	CARBON 15K 5% 1/4W	
R85	1-249-441-11	CARBON 100K 5% 1/4W	
R86	1-249-435-11	CARBON 33K 5% 1/4W	
R87	1-249-405-11	CARBON 100 5% 1/4W	
R88	1-249-421-11	CARBON 2.2K 5% 1/4W	
R89	1-249-405-11	CARBON 100 5% 1/4W	
R90	1-249-439-11	CARBON 68K 5% 1/4W	
R91	1-249-417-11	CARBON 1K 5% 1/4W	
R92	1-249-428-11	CARBON 8.2K 5% 1/4W	
R93	1-249-441-11	CARBON 100K 5% 1/4W	
R94	1-249-405-11	CARBON 100 5% 1/4W	
R95	1-249-435-11	CARBON 33K 5% 1/4W	
R96	1-249-421-11	CARBON 2.2K 5% 1/4W	
R97	1-249-405-11	CARBON 100 5% 1/4W	
R98	1-249-439-11	CARBON 68K 5% 1/4W	
R99	1-249-417-11	CARBON 1K 5% 1/4W	
R100	1-249-428-11	CARBON 8.2K 5% 1/4W	
R101	1-249-441-11	CARBON 100K 5% 1/4W	
R102	1-249-405-11	CARBON 100 5% 1/4W	
R103	1-249-435-11	CARBON 33K 5% 1/4W	
R104	1-249-421-11	CARBON 2.2K 5% 1/4W	
R105	1-249-405-11	CARBON 100 5% 1/4W	
R106	1-249-417-11	CARBON 1K 5% 1/4W	
R107	1-249-428-11	CARBON 8.2K 5% 1/4W	
R108	1-249-439-11	CARBON 68K 5% 1/4W	
R109	1-249-405-11	CARBON 100 5% 1/4W	
R111	1-249-417-11	CARBON 1K 5% 1/4W	
R112	1-249-428-11	CARBON 8.2K 5% 1/4W	
R113	1-249-405-11	CARBON 100 5% 1/4W	
R114	1-215-421-00	METAL 1K 1% 1/6W	
R115	1-249-405-11	CARBON 100 5% 1/4W	
R116	1-249-405-11	CARBON 100 5% 1/4W	
R118	1-249-417-11	CARBON 1K 5% 1/4W	
R119	1-249-428-11	CARBON 8.2K 5% 1/4W	
R120	1-249-405-11	CARBON 100 5% 1/4W	
R121	1-215-421-00	METAL 1K 1% 1/6W	
R122	1-249-405-11	CARBON 100 5% 1/4W	
R123	1-249-405-11	CARBON 100 5% 1/4W	
R125	1-249-417-11	CARBON 1K 5% 1/4W	
R126	1-249-428-11	CARBON 8.2K 5% 1/4W	
R127	1-249-405-11	CARBON 100 5% 1/4W	
R128	1-215-421-00	METAL 1K 1% 1/6W	
R129	1-249-405-11	CARBON 100 5% 1/4W	
R130	1-249-433-11	CARBON 22K 5% 1/4W	
R133	1-249-422-11	CARBON 2.7K 5% 1/4W	
R136	1-249-434-11	CARBON 27K 5% 1/4W	
R137	1-249-430-11	CARBON 12K 5% 1/4W	
R138	1-249-439-11	CARBON 68K 5% 1/4W	
R201	1-249-435-11	CARBON 33K 5% 1/4W	
R202	1-249-435-11	CARBON 33K 5% 1/4W	
R203	1-249-405-11	CARBON 100 5% 1/4W	
R204	1-215-454-00	CARBON 24K 5% 1/4W	
R205	1-249-429-11	CARBON 10K 5% 1/4W	
R206	1-249-417-11	CARBON 1K 5% 1/4W	
R207	1-215-461-00	METAL 47K 1% 1/6W	
R208	1-215-445-00	METAL 10K 1% 1/6W	
R209	1-249-417-11	CARBON 1K 5% 1/4W	
R210	1-215-397-00	METAL 100 1% 1/6W	
R212	1-215-397-00	METAL 100 1% 1/6W	
R213	1-249-439-11	CARBON 68K 5% 1/4W	
R214	1-215-413-00	METAL 470 1% 1/6W	
R215	1-215-413-00	METAL 470 1% 1/6W	
R216	1-215-413-00	METAL 470 1% 1/6W	
R217	1-249-417-11	CARBON 1K 5% 1/4W	

BB

Ref.No.	Part No.	Description				Remark
R218	1-249-421-11	CARBON	2.2K	5%	1/4W	
R219	1-249-405-11	CARBON	100	5%	1/4W	
R220	1-249-421-11	CARBON	2.2K	5%	1/4W	
R221	1-249-405-11	CARBON	100	5%	1/4W	
R222	1-249-421-11	CARBON	2.2K	5%	1/4W	
R223	1-249-405-11	CARBON	100	5%	1/4W	
R224	1-249-436-11	CARBON	39K	5%	1/4W	
R225	1-215-469-00	METAL	100K	1%	1/6W	
R226	1-215-483-00	METAL	390K	1%	1/6W	
R227	1-215-421-00	METAL	1K	1%	1/6W	
R228	1-215-421-00	METAL	1K	1%	1/6W	
R229	1-249-429-11	CARBON	10K	5%	1/4W	
R230	1-249-417-11	CARBON	1K	5%	1/4W	
R231	1-215-471-00	METAL	120K	1%	1/6W	
R232	1-215-455-00	METAL	27K	1%	1/6W	
R233	1-215-455-00	METAL	27K	1%	1/6W	
R234	1-215-451-00	METAL	18K	1%	1/6W	
R235	1-215-451-00	METAL	18K	1%	1/6W	
R236	1-215-459-00	METAL	39K	1%	1/6W	
R237	1-249-436-11	CARBON	39K	5%	1/4W	
R238	1-215-451-00	METAL	18K	1%	1/6W	
R239	1-215-439-00	METAL	5.6K	1%	1/6W	
R240	1-215-455-00	METAL	27K	1%	1/6W	
R241	1-249-417-11	CARBON	1K	5%	1/4W	
R242	1-249-417-11	CARBON	1K	5%	1/4W	
R243	1-215-442-00	METAL	7.5K	1%	1/6W	
R244	1-249-428-11	CARBON	8.2K	5%	1/4W	
R245	1-249-417-11	CARBON	1K	5%	1/4W	
R246	1-249-401-11	CARBON	47	5%	1/4W	
R247	1-249-417-11	CARBON	1K	5%	1/4W	
R248	1-249-433-11	CARBON	22K	5%	1/4W	
R249 ⚠	1-215-465-91	METAL	68K	1%	1/6W	
R250	1-249-417-11	CARBON	1K	5%	1/4W	
R251	1-249-405-11	CARBON	100	5%	1/4W	
R252	1-249-401-11	CARBON	47	5%	1/4W	
R253	1-249-417-11	CARBON	1K	5%	1/4W	
R254	1-249-429-11	CARBON	10K	5%	1/4W	
R255	1-249-429-11	CARBON	10K	5%	1/4W	
R256	1-249-438-11	CARBON	56K	5%	1/4W	
R257	1-249-434-11	CARBON	27K	5%	1/4W	
R258	1-249-405-11	CARBON	100	5%	1/4W	
R259	1-249-421-11	CARBON	2.2K	5%	1/4W	
R260	1-249-405-11	CARBON	100	5%	1/4W	
R261	1-249-414-11	CARBON	560	5%	1/4W	
R262	1-249-427-11	CARBON	6.8K	5%	1/4W	
R263	1-249-405-11	CARBON	100	5%	1/4W	
R264	1-249-405-11	CARBON	100	5%	1/4W	
R265	1-249-405-11	CARBON	100	5%	1/4W	
R266	1-249-417-11	CARBON	1K	5%	1/4W	
R267	1-249-405-11	CARBON	100	5%	1/4W	
R268	1-249-401-11	CARBON	47	5%	1/4W	
R269	1-249-417-11	CARBON	1K	5%	1/4W	
R270	1-249-429-11	CARBON	10K	5%	1/4W	
R271	1-249-429-11	CARBON	10K	5%	1/4W	
R272	1-249-438-11	CARBON	56K	5%	1/4W	
R273	1-249-434-11	CARBON	27K	5%	1/4W	
R274	1-249-405-11	CARBON	100	5%	1/4W	
R275	1-249-421-11	CARBON	2.2K	5%	1/4W	
R276	1-249-405-11	CARBON	100	5%	1/4W	
R277	1-249-414-11	CARBON	560	5%	1/4W	
R278	1-249-427-11	CARBON	6.8K	5%	1/4W	
R279	1-249-405-11	CARBON	100	5%	1/4W	
R280	1-249-405-11	CARBON	100	5%	1/4W	
R281	1-249-405-11	CARBON	100	5%	1/4W	
R282	1-249-417-11	CARBON	1K	5%	1/4W	
R283	1-249-405-11	CARBON	100	5%	1/4W	
R284	1-249-401-11	CARBON	47	5%	1/4W	
R285	1-249-417-11	CARBON	1K	5%	1/4W	
R286	1-249-429-11	CARBON	10K	5%	1/4W	
R287	1-249-429-11	CARBON	10K	5%	1/4W	
R288	1-249-438-11	CARBON	56K	5%	1/4W	
R289	1-249-434-11	CARBON	27K	5%	1/4W	
R290	1-249-405-11	CARBON	100	5%	1/4W	
R291	1-249-421-11	CARBON	2.2K	5%	1/4W	
R292	1-249-405-11	CARBON	100	5%	1/4W	
R293	1-249-414-11	CARBON	560	5%	1/4W	
R294	1-249-427-11	CARBON	6.8K	5%	1/4W	
R295	1-249-405-11	CARBON	100	5%	1/4W	
R296	1-249-405-11	CARBON	100	5%	1/4W	
R297	1-249-405-11	CARBON	100	5%	1/4W	
R298	1-215-453-00	METAL	22K	1%	1/6W	
R299	1-215-453-00	METAL	22K	1%	1/6W	
R300	1-249-417-11	CARBON	1K	5%	1/4W	
R301	1-215-485-00	METAL	470K	1%	1/6W	
R302	1-215-469-00	METAL	100K	1%	1/6W	
R303	1-215-493-00	CARBON	1M	5%	1/4W	
R304	1-215-421-00	METAL	1K	1%	1/6W	
R305	1-215-461-00	METAL	47K	1%	1/6W	
R306	1-249-417-11	CARBON	1K	5%	1/4W	
R307	1-249-429-11	CARBON	10K	5%	1/4W	
R308	1-215-439-00	METAL	5.6K	1%	1/6W	
R309	1-249-436-11	CARBON	39K	5%	1/4W	
R310	1-249-422-11	CARBON	2.7K	5%	1/4W	
R311	1-215-439-00	METAL	5.6K	1%	1/6W	
R312	1-249-417-11	CARBON	1K	5%	1/4W	
R313	1-247-881-00	CARBON	120K	5%	1/4W	
R316	1-249-429-11	CARBON	10K	5%	1/4W	
R317	1-247-849-00	CARBON	5.6K	5%	1/4W	
R318	1-249-417-11	CARBON	1K	5%	1/4W	
R319	1-249-417-11	CARBON	1K	5%	1/4W	
R320	1-249-405-11	CARBON	100	5%	1/4W	
R321	1-249-429-11	CARBON	10K	5%	1/4W	
R322	1-249-405-11	CARBON	100	5%	1/4W	
R323	1-249-416-11	CARBON	820	5%	1/4W	
R324	1-249-434-11	CARBON	27K	5%	1/4W	
R325	1-247-849-00	CARBON	5.6K	5%	1/4W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
R326	1-249-441-11	CARBON	100K	5%	1/4W	
R327	1-249-441-11	CARBON	100K	5%	1/4W	
R328	1-249-441-11	CARBON	100K	5%	1/4W	
R329	1-249-433-11	CARBON	22K	5%	1/4W	
R330	1-249-430-11	CARBON	12K	5%	1/4W	
R331	1-249-413-11	CARBON	470	5%	1/4W	
R332	1-249-413-11	CARBON	470	5%	1/4W	
R333	1-249-413-11	CARBON	470	5%	1/4W	
R334	1-249-413-11	CARBON	470	5%	1/4W	
R335	1-249-405-11	CARBON	100	5%	1/4W	
R336	1-215-439-00	METAL	5.6K	1%	1/6W	
R337	1-215-445-00	METAL	10K	1%	1/6W	
R401	1-249-405-11	CARBON	100	5%	1/4W	
R402	1-249-429-11	CARBON	10K	5%	1/4W	
R403	1-215-425-00	METAL	1.5K	1%	1/6W	
R404	1-249-417-11	CARBON	1K	5%	1/4W	
R405	1-249-405-11	CARBON	100	5%	1/4W	
R406	1-249-420-11	CARBON	1.8K	5%	1/4W	
R407	1-215-425-00	METAL	1.5K	1%	1/6W	
R408	1-215-469-00	METAL	100K	1%	1/6W	
R409	1-215-453-00	METAL	22K	1%	1/6W	
R410	1-215-429-00	METAL	2.2K	1%	1/6W	
R411	1-215-469-00	METAL	100K	1%	1/6W	
R412	1-215-425-00	METAL	1.5K	1%	1/6W	
R413	1-249-405-11	CARBON	100	5%	1/4W	
R414	1-249-419-11	CARBON	1.5K	5%	1/4W	
R415	1-249-417-11	CARBON	1K	5%	1/4W	
R416	1-215-397-00	METAL	100	1%	1/6W	
R417	1-215-399-00	METAL	120	1%	1/6W	
R418	1-215-427-00	METAL	1.8K	1%	1/6W	
R419	1-249-417-11	CARBON	1K	5%	1/4W	
R420	1-249-417-11	CARBON	1K	5%	1/4W	
R421	1-249-411-11	CARBON	330	5%	1/4W	
R422	1-249-433-11	CARBON	22K	5%	1/4W	
R423	1-249-405-11	CARBON	100	5%	1/4W	
R424	1-249-402-11	CARBON	56	5%	1/4W	
R425	1-249-425-11	CARBON	4.7K	5%	1/4W	
R426	1-249-405-11	CARBON	100	5%	1/4W	
R427	1-249-405-11	CARBON	100	5%	1/4W	
R428	1-249-405-11	CARBON	100	5%	1/4W	
R429	1-249-405-11	CARBON	100	5%	1/4W	
R430	1-249-405-11	CARBON	100	5%	1/4W	
R431	1-249-405-11	CARBON	100	5%	1/4W	
R432	1-249-405-11	CARBON	100	5%	1/4W	
R433	1-247-849-00	CARBON	5.6K	5%	1/4W	
R434	1-249-425-11	CARBON	4.7K	5%	1/4W	
R435	1-249-417-11	CARBON	1K	5%	1/4W	
R436	1-215-437-00	METAL	4.7K	1%	1/6W	
R437	1-215-467-00	METAL	82K	1%	1/6W	
R438	1-215-453-00	METAL	22K	1%	1/6W	
R439	1-249-427-11	CARBON	6.8K	5%	1/4W	
R440	1-215-440-00	CARBON	6.2K	5%	1/4W	
R441	1-249-430-11	CARBON	12K	5%	1/4W	
R442	1-249-430-11	CARBON	12K	5%	1/4W	
R443	1-249-405-11	CARBON	100	5%	1/4W	
R444	1-249-425-11	CARBON	4.7K	5%	1/4W	
R445	1-249-417-11	CARBON	1K	5%	1/4W	
R446	1-249-423-11	CARBON	3.3K	5%	1/4W	
R447	1-249-417-11	CARBON	1K	5%	1/4W	
R448	1-215-445-00	METAL	10K	1%	1/6W	
R449	1-215-415-00	METAL	560	1%	1/6W	
R450	1-249-405-11	CARBON	100	5%	1/4W	
R451	1-215-415-00	METAL	560	1%	1/6W	
R452	1-215-421-00	METAL	1K	1%	1/6W	
R453	1-249-405-11	CARBON	100	5%	1/4W	
R454	1-215-437-00	METAL	4.7K	1%	1/6W	
R455	1-215-431-00	METAL	2.7K	1%	1/6W	
R456	1-215-421-00	METAL	1K	1%	1/6W	
R457	1-215-429-00	METAL	2.2K	1%	1/6W	
R470	1-249-413-11	CARBON	470	5%	1/4W	
R471	1-249-401-11	CARBON	47	5%	1/4W	
R472	1-215-475-00	METAL	180K	1%	1/6W	
R501	1-249-405-11	CARBON	100	5%	1/4W	
R502	1-249-429-11	CARBON	10K	5%	1/4W	
R503	1-215-425-00	METAL	1.5K	1%	1/6W	
R504	1-249-417-11	CARBON	1K	5%	1/4W	
R505	1-249-405-11	CARBON	100	5%	1/4W	
R506	1-249-420-11	CARBON	1.8K	5%	1/4W	
R507	1-215-425-00	METAL	1.5K	1%	1/6W	
R508	1-215-469-00	METAL	100K	1%	1/6W	
R509	1-215-453-00	METAL	22K	1%	1/6W	
R510	1-215-429-00	METAL	2.2K	1%	1/6W	
R511	1-215-469-00	METAL	100K	1%	1/6W	
R512	1-215-425-00	METAL	1.5K	1%	1/6W	
R513	1-249-405-11	CARBON	100	5%	1/4W	
R514	1-249-419-11	CARBON	1.5K	5%	1/4W	
R515	1-249-417-11	CARBON	1K	5%	1/4W	
R516	1-215-397-00	METAL	100	1%	1/6W	
R517	1-215-399-00	METAL	120	1%	1/6W	
R518	1-215-427-00	METAL	1.8K	1%	1/6W	
R519	1-249-417-11	CARBON	1K	5%	1/4W	
R520	1-249-417-11	CARBON	1K	5%	1/4W	
R521	1-249-411-11	CARBON	330	5%	1/4W	
R522	1-249-433-11	CARBON	22K	5%	1/4W	
R523	1-249-405-11	CARBON	100	5%	1/4W	
R524	1-249-402-11	CARBON	56	5%	1/4W	
R525	1-249-425-11	CARBON	4.7K	5%	1/4W	
R526	1-249-405-11	CARBON	100	5%	1/4W	
R527	1-249-405-11	CARBON	100	5%	1/4W	
R528	1-249-405-11	CARBON	100	5%	1/4W	
R529	1-249-405-11	CARBON	100	5%	1/4W	
R530	1-249-405-11	CARBON	100	5%	1/4W	
R531	1-249-405-11	CARBON	100	5%	1/4W	
R532	1-249-405-11	CARBON	100	5%	1/4W	
R533	1-247-849-00	CARBON	5.6K	5%	1/4W	
R534	1-249-425-11	CARBON	4.7K	5%	1/4W	

BB

Ref.No.	Part No.	Description				Remark
R535	1-249-417-11	CARBON	1K	5%	1/4W	
R536	1-215-437-00	METAL	4.7K	1%	1/6W	
R537	1-215-467-00	METAL	82K	1%	1/6W	
R538	1-215-453-00	METAL	22K	1%	1/6W	
R539	1-249-427-11	CARBON	6.8K	5%	1/4W	
R540	1-215-440-00	CARBON	6.2K	5%	1/4W	
R541	1-249-430-11	CARBON	12K	5%	1/4W	
R542	1-249-430-11	CARBON	12K	5%	1/4W	
R543	1-249-405-11	CARBON	100	5%	1/4W	
R544	1-249-425-11	CARBON	4.7K	5%	1/4W	
R545	1-249-417-11	CARBON	1K	5%	1/4W	
R546	1-249-423-11	CARBON	3.3K	5%	1/4W	
R547	1-249-417-11	CARBON	1K	5%	1/4W	
R548	1-215-445-00	METAL	10K	1%	1/6W	
R549	1-215-415-00	METAL	560	1%	1/6W	
R550	1-249-405-11	CARBON	100	5%	1/4W	
R551	1-215-415-00	METAL	560	1%	1/6W	
R552	1-215-421-00	METAL	1K	1%	1/6W	
R553	1-249-405-11	CARBON	100	5%	1/4W	
R554	1-215-437-00	METAL	4.7K	1%	1/6W	
R555	1-215-431-00	METAL	2.7K	1%	1/6W	
R556	1-215-421-00	METAL	1K	1%	1/6W	
R557	1-215-429-00	METAL	2.2K	1%	1/6W	
R570	1-249-413-11	CARBON	470	5%	1/4W	
R571	1-249-401-11	CARBON	47	5%	1/4W	
R572	1-215-475-00	METAL	180K	1%	1/6W	
R601	1-249-405-11	CARBON	100	5%	1/4W	
R602	1-249-429-11	CARBON	10K	5%	1/4W	
R603	1-215-425-00	METAL	1.5K	1%	1/6W	
R604	1-249-417-11	CARBON	1K	5%	1/4W	
R605	1-249-405-11	CARBON	100	5%	1/4W	
R606	1-249-420-11	CARBON	1.8K	5%	1/4W	
R607	1-215-425-00	METAL	1.5K	1%	1/6W	
R608	1-215-469-00	METAL	100K	1%	1/6W	
R609	1-215-453-00	METAL	22K	1%	1/6W	
R610	1-215-429-00	METAL	2.2K	1%	1/6W	
R611	1-215-469-00	METAL	100K	1%	1/6W	
R612	1-215-425-00	METAL	1.5K	1%	1/6W	
R613	1-249-405-11	CARBON	100	5%	1/4W	
R614	1-249-419-11	CARBON	1.5K	5%	1/4W	
R615	1-249-417-11	CARBON	1K	5%	1/4W	
R616	1-215-397-00	METAL	100	1%	1/6W	
R617	1-215-399-00	METAL	120	1%	1/6W	
R618	1-215-427-00	METAL	1.8K	1%	1/6W	
R619	1-249-417-11	CARBON	1K	5%	1/4W	
R620	1-249-417-11	CARBON	1K	5%	1/4W	
R621	1-249-411-11	CARBON	330	5%	1/4W	
R622	1-249-433-11	CARBON	22K	5%	1/4W	
R623	1-249-405-11	CARBON	100	5%	1/4W	
R624	1-249-402-11	CARBON	56	5%	1/4W	
R625	1-249-425-11	CARBON	4.7K	5%	1/4W	
R626	1-249-405-11	CARBON	100	5%	1/4W	
R627	1-249-405-11	CARBON	100	5%	1/4W	
R628	1-249-405-11	CARBON	100	5%	1/4W	
R629	1-249-405-11	CARBON	100	5%	1/4W	
R630	1-249-405-11	CARBON	100	5%	1/4W	
R631	1-249-405-11	CARBON	100	5%	1/4W	
R632	1-249-405-11	CARBON	100	5%	1/4W	
R633	1-247-849-00	CARBON	5.6K	5%	1/4W	
R634	1-249-425-11	CARBON	4.7K	5%	1/4W	
R635	1-249-417-11	CARBON	1K	5%	1/4W	
R636	1-215-437-00	METAL	4.7K	1%	1/6W	
R637	1-215-467-00	METAL	82K	1%	1/6W	
R638	1-215-453-00	METAL	22K	1%	1/6W	
R639	1-249-427-11	CARBON	6.8K	5%	1/4W	
R640	1-215-440-00	CARBON	6.2K	5%	1/4W	
R641	1-249-430-11	CARBON	12K	5%	1/4W	
R642	1-249-430-11	CARBON	12K	5%	1/4W	
R643	1-249-405-11	CARBON	100	5%	1/4W	
R644	1-249-425-11	CARBON	4.7K	5%	1/4W	
R645	1-249-417-11	CARBON	1K	5%	1/4W	
R646	1-249-423-11	CARBON	3.3K	5%	1/4W	
R647	1-249-417-11	CARBON	1K	5%	1/4W	
R648	1-215-445-00	METAL	10K	1%	1/6W	
R649	1-215-415-00	METAL	560	1%	1/6W	
R650	1-249-405-11	CARBON	100	5%	1/4W	
R651	1-215-415-00	METAL	560	1%	1/6W	
R652	1-215-421-00	METAL	1K	1%	1/6W	
R653	1-249-405-11	CARBON	100	5%	1/4W	
R654	1-215-437-00	METAL	4.7K	1%	1/6W	
R655	1-215-431-00	METAL	2.7K	1%	1/6W	
R656	1-215-421-00	METAL	1K	1%	1/6W	
R657	1-215-429-00	METAL	2.2K	1%	1/6W	
R658	1-215-451-00	METAL	18K	1%	1/6W	
R659	1-215-434-00	METAL	3.6K	1%	1/6W	
R660	1-215-449-00	METAL	15K	1%	1/6W	
R661	1-249-417-11	CARBON	1K	5%	1/4W	
R662	1-249-417-11	CARBON	1K	5%	1/4W	
R663	1-249-425-11	CARBON	4.7K	5%	1/4W	
R664	1-215-449-00	METAL	15K	1%	1/6W	
R665	1-215-431-00	METAL	2.7K	1%	1/6W	
R666	1-215-449-00	METAL	15K	1%	1/6W	
R667	1-249-417-11	CARBON	1K	5%	1/4W	
R668	1-215-421-00	METAL	1K	1%	1/6W	
R669	1-215-429-00	METAL	2.2K	1%	1/6W	
R670	1-249-413-11	CARBON	470	5%	1/4W	
R671	1-249-401-11	CARBON	47	5%	1/4W	
R672	1-215-475-00	METAL	180K	1%	1/6W	
R673	1-249-422-11	CARBON	2.7K	5%	1/4W	
R711	1-249-405-11	CARBON	100	5%	1/4W	
R712	1-249-425-11	CARBON	4.7K	5%	1/4W	
R713	1-249-433-11	CARBON	22K	5%	1/4W	
R714	1-215-493-00	CARBON	1M	5%	1/4W	
R715	1-249-433-11	CARBON	22K	5%	1/4W	
R716	1-249-437-11	CARBON	47K	5%	1/4W	
R717	1-249-429-11	CARBON	10K	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R718	1-249-429-11	CARBON	10K	5%	1/4W	
R719	1-249-421-11	CARBON	2.2K	5%	1/4W	
R720	1-249-430-11	CARBON	12K	5%	1/4W	
R721	1-249-417-11	CARBON	1K	5%	1/4W	
R722	1-249-419-11	CARBON	1.5K	5%	1/4W	
R731	1-249-417-11	CARBON	1K	5%	1/4W	
R732	1-215-439-00	METAL	5.6K	1%	1/6W	
R735	1-249-423-11	CARBON	3.3K	5%	1/4W	
R736	1-215-469-00	METAL	100K	1%	1/6W	
R737	1-249-405-11	CARBON	100	5%	1/4W	
R738	1-249-416-11	CARBON	820	5%	1/4W	
R739	1-249-429-11	CARBON	10K	5%	1/4W	
R740	1-249-437-11	CARBON	47K	5%	1/4W	
R741	1-215-413-00	METAL	470	1%	1/6W	
R742	1-215-458-00	METAL	36K	1%	1/6W	
R743	1-249-429-11	CARBON	10K	5%	1/4W	
R744	1-249-429-11	CARBON	10K	5%	1/4W	
R745	1-249-437-11	CARBON	47K	5%	1/4W	
R746	1-249-433-11	CARBON	22K	5%	1/4W	
R771	1-249-429-11	CARBON	10K	5%	1/4W	
R772	1-249-429-11	CARBON	10K	5%	1/4W	
R773	1-249-429-11	CARBON	10K	5%	1/4W	
R774	1-249-429-11	CARBON	10K	5%	1/4W	
R775	1-249-438-11	CARBON	56K	5%	1/4W	
R776	1-249-436-11	CARBON	39K	5%	1/4W	
R777	1-249-436-11	CARBON	39K	5%	1/4W	
R778	1-249-429-11	CARBON	10K	5%	1/4W	
R779	1-249-436-11	CARBON	39K	5%	1/4W	
R784	1-249-417-11	CARBON	1K	5%	1/4W	
R785	1-249-405-11	CARBON	100	5%	1/4W	
R786	1-249-429-11	CARBON	10K	5%	1/4W	
R787	1-249-409-11	CARBON	220	5%	1/4W	
R788	1-249-417-11	CARBON	1K	5%	1/4W	
R789	1-249-417-11	CARBON	1K	5%	1/4W	
R790	1-249-417-11	CARBON	1K	5%	1/4W	
R791	1-249-409-11	CARBON	220	5%	1/4W	
R794	1-249-409-11	CARBON	220	5%	1/4W	
R795	1-249-429-11	CARBON	10K	5%	1/4W	
R796	1-249-429-11	CARBON	10K	5%	1/4W	
R797	1-249-429-11	CARBON	10K	5%	1/4W	
R798	1-249-405-11	CARBON	100	5%	1/4W	
R799	1-249-405-11	CARBON	100	5%	1/4W	
R823	1-249-417-11	CARBON	1K	5%	1/4W	
R824	1-249-425-11	CARBON	4.7K	5%	1/4W	
R901	1-247-883-00	CARBON	150K	5%	1/4W	
R931	1-247-883-00	CARBON	150K	5%	1/4W	
R961	1-247-883-00	CARBON	150K	5%	1/4W	

VARIABLE RESISTOR

RV601	1-228-995-00	RES, ADJ, CARBON 22K	

Ref.No.	Part No.	Description				Remark
	*1-617-539-11	BG BOARD ********				

CONNECTOR

BG1	*1-506-604-11	PLUG, L TYPE (2.0MM PITCH) 15P	

CAPACITOR

C1	1-136-165-00	FILM	0.1MF	5%	50V	
C2	1-124-462-00	ELECT	10MF	20%	16V	
C3	1-161-021-11	CERAMIC	0.047MF	10%	25V	
C4	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C905	1-124-236-00	ELECT	47MF	20%	16V	
C906	1-161-021-11	CERAMIC	0.047MF	10%	25V	

IC

IC1	8-759-140-66	IC UPD4066BC	
IC2	8-759-145-58	IC UPC4558C	

TRANSISTOR

Q1	8-729-603-50	TRANSISTOR 2SC403SP	
Q2	8-729-603-50	TRANSISTOR 2SC403SP	
Q3	8-729-603-50	TRANSISTOR 2SC403SP	
Q4	8-729-178-54	TRANSISTOR 2SC2785	
Q5	8-729-178-54	TRANSISTOR 2SC2785	

RESISTOR

R1	1-249-405-11	CARBON	100	5%	1/4W	
R2	1-249-423-11	CARBON	3.3K	5%	1/4W	
R3	1-249-417-11	CARBON	1K	5%	1/4W	
R4	1-249-405-11	CARBON	100	5%	1/4W	
R5	1-215-442-00	CARBON	7.5K	5%	1/4W	
R6	1-249-423-11	CARBON	3.3K	5%	1/4W	
R7	1-249-427-11	CARBON	6.8K	5%	1/4W	
R8	1-249-429-11	CARBON	10K	5%	1/4W	
R9	1-249-434-11	CARBON	27K	5%	1/4W	
R10	1-249-414-11	CARBON	560	5%	1/4W	
R11	1-249-405-11	CARBON	100	5%	1/4W	
R12	1-249-424-11	CARBON	3.9K	5%	1/4W	
R13	1-249-405-11	CARBON	100	5%	1/4W	
R14	1-249-405-11	CARBON	100	5%	1/4W	
R15	1-249-417-11	CARBON	1K	5%	1/4W	
R16	1-249-425-11	CARBON	4.7K	5%	1/4W	
R17	1-249-405-11	CARBON	100	5%	1/4W	
R18	1-249-425-11	CARBON	4.7K	5%	1/4W	
R19	1-249-417-11	CARBON	1K	5%	1/4W	
R20	1-249-421-11	CARBON	2.2K	5%	1/4W	

BH BI

Ref.No.	Part No.	Description	Remark
	*1-617-540-11	BH BOARD ********	
		CONNECTOR	
BH1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	
BH2	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	
		CAPACITOR	
C701	1-102-973-00	CERAMIC 100PF 5% 50V	
C702	1-102-973-00	CERAMIC 100PF 5% 50V	
C703	1-102-973-00	CERAMIC 100PF 5% 50V	
C707	1-102-973-00	CERAMIC 100PF 5% 50V	
C708	1-102-973-00	CERAMIC 100PF 5% 50V	
C714	1-124-236-00	ELECT 47MF 20% 16V	
C715	1-101-004-00	CERAMIC 0.01MF 50V	
C716	1-101-004-00	CERAMIC 0.01MF 50V	
C904	1-124-236-00	ELECT 47MF 20% 16V	
		DIODE	
D707	8-719-911-19	DIODE 1SS119	
		IC	
IC701	8-759-045-38	IC MC14538BCP	
IC703	8-759-345-38	IC HD14538BP	
IC705	8-759-340-53	IC HD14053BP	
		TRANSISTOR	
Q701	⚠8-729-117-53	TRANSISTOR 2SA1175-H	
Q702	8-729-178-54	TRANSISTOR 2SC2785	
Q703	8-729-178-54	TRANSISTOR 2SC2785	
Q704	8-729-117-54	TRANSISTOR 2SA1175	
Q705	8-729-178-54	TRANSISTOR 2SC2785	
Q709	8-729-178-54	TRANSISTOR 2SC2785	
Q713	8-729-178-54	TRANSISTOR 2SC2785	
Q714	8-729-178-54	TRANSISTOR 2SC2785	
Q715	8-729-178-54	TRANSISTOR 2SC2785	
Q716	8-729-117-54	TRANSISTOR 2SA1175	
Q717	8-729-603-50	TRANSISTOR 2SC403SP	
Q718	8-729-117-54	TRANSISTOR 2SA1175	
Q719	8-729-178-54	TRANSISTOR 2SC2785	
		RESISTOR	
R701	1-249-405-11	CARBON 100 5% 1/4W	
R702	1-249-419-11	CARBON 1.5K 5% 1/4W	
R703	1-249-430-11	CARBON 12K 5% 1/4W	
R704	1-215-435-00	METAL 3.9K 1% 1/6W	
R705	1-215-455-00	METAL 27K 1% 1/6W	
R706	1-249-419-11	CARBON 1.5K 5% 1/4W	
R707	1-249-430-11	CARBON 12K 5% 1/4W	
R708	1-215-433-00	METAL 3.3K 1% 1/6W	
R709	1-215-447-00	METAL 12K 1% 1/6W	
R710	1-249-419-11	CARBON 1.5K 5% 1/4W	

Ref.No.	Part No.	Description	Remark
R725	1-249-417-11	CARBON 1K 5% 1/4W	
R726	1-215-439-00	METAL 5.6K 1% 1/6W	
R727	1-249-416-11	CARBON 820 5% 1/4W	
R728	1-249-430-11	CARBON 12K 5% 1/4W	
R729	1-249-430-11	CARBON 12K 5% 1/4W	
R730	1-215-481-00	METAL 330K 1% 1/6W	
R747	1-249-417-11	CARBON 1K 5% 1/4W	
R748	1-249-422-11	CARBON 2.7K 5% 1/4W	
R749	1-249-429-11	CARBON 10K 5% 1/4W	
R750	1-249-405-11	CARBON 100 5% 1/4W	
R751	1-249-421-11	CARBON 2.2K 5% 1/4W	
R752	1-249-429-11	CARBON 10K 5% 1/4W	
R753	1-249-439-11	CARBON 68K 5% 1/4W	
R754	1-249-441-11	CARBON 100K 5% 1/4W	
R755	1-249-405-11	CARBON 100 5% 1/4W	
R756	1-249-424-11	CARBON 3.9K 5% 1/4W	
R757	1-249-405-11	CARBON 100 5% 1/4W	
R758	1-249-425-11	CARBON 4.7K 5% 1/4W	
R759	1-249-425-11	CARBON 4.7K 5% 1/4W	
R760	1-249-401-11	CARBON 47 5% 1/4W	
R761	1-249-421-11	CARBON 2.2K 5% 1/4W	
R762	1-249-434-11	CARBON 27K 5% 1/4W	
R763	1-249-432-11	CARBON 18K 5% 1/4W	
R764	1-249-425-11	CARBON 4.7K 5% 1/4W	
R765	1-249-423-11	CARBON 3.3K 5% 1/4W	
R766	1-249-423-11	CARBON 3.3K 5% 1/4W	
R767	1-249-434-11	CARBON 27K 5% 1/4W	
R768	1-249-431-11	CARBON 15K 5% 1/4W	
R769	1-249-429-11	CARBON 10K 5% 1/4W	
R770	1-249-441-11	CARBON 100K 5% 1/4W	
R792	1-215-418-00	CARBON 750 5% 1/4W	
R793	1-249-413-11	CARBON 470 5% 1/4W	
**			
	*1-617-541-11	BI BOARD ********	
		CONNECTOR	
BI1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	
BI2	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	
		CAPACITOR	
C801	1-102-973-00	CERAMIC 100PF 5% 50V	
C802	1-101-361-00	CERAMIC 150PF 5% 50V	
C803	1-102-973-00	CERAMIC 100PF 5% 50V	
C804	1-101-361-00	CERAMIC 150PF 5% 50V	
C805	1-102-074-00	CERAMIC 0.001MF 10% 50V	
C807	1-124-236-00	ELECT 47MF 20% 16V	
C808	1-124-236-00	ELECT 47MF 20% 16V	
C809	1-102-963-00	CERAMIC 33PF 5% 50V	
C810	1-102-963-00	CERAMIC 33PF 5% 50V	
C811	1-136-165-00	FILM 0.1MF 5% 50V	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
C812	1-101-004-00	CERAMIC	0.01MF			50V
C813	1-101-004-00	CERAMIC	0.01MF			50V
C815	1-102-965-00	CERAMIC	39PF	5%		50V
C816	1-102-965-00	CERAMIC	39PF	5%		50V
C817	1-101-004-00	CERAMIC	0.01MF			50V
C818	1-101-004-00	CERAMIC	0.01MF			50V
C819	1-161-021-11	CERAMIC	0.047MF	10%		25V
C820	1-124-462-00	ELECT	10MF	20%		16V
C821	1-123-611-00	ELECT	1MF	20%		50V
C823	1-101-880-00	CERAMIC	47PF	5%		50V
C905	1-161-021-11	CERAMIC	0.047MF	10%		25V

DIODE

Ref.No.	Part No.	Description
D801	8-719-911-19	DIODE 1SS119
D802	8-719-911-19	DIODE 1SS119
D803	8-719-911-19	DIODE 1SS119

IC

Ref.No.	Part No.	Description
IC801	8-759-345-38	IC HD14538BP
IC802	8-759-345-38	IC HD14538BP
IC803	8-757-948-00	IC CX7948
IC804	8-759-108-05	IC UPC78L05A

COIL

Ref.No.	Part No.	Description
L801	1-408-414-00	MICRO INDUCTOR 27UH

TRANSISTOR

Ref.No.	Part No.	Description
Q801	8-729-178-54	TRANSISTOR 2SC2785
Q802	8-729-178-54	TRANSISTOR 2SC2785
Q803	8-729-900-89	TRANSISTOR DTC144ES
Q804	8-729-178-54	TRANSISTOR 2SC2785
Q805	8-729-900-89	TRANSISTOR DTC144ES
Q806	8-729-178-54	TRANSISTOR 2SC2785
Q807	8-729-178-54	TRANSISTOR 2SC2785
Q808	8-729-178-54	TRANSISTOR 2SC2785
Q809	8-729-117-54	TRANSISTOR 2SA1175
Q811	8-729-178-54	TRANSISTOR 2SC2785
Q812	8-729-900-89	TRANSISTOR DTC144ES
Q813	8-729-117-54	TRANSISTOR 2SA1175
Q814	8-729-900-89	TRANSISTOR DTC144ES

RESISTOR

Ref.No.	Part No.	Description				Remark
R801	1-249-417-11	CARBON	1K	5%	1/4W	
R802	1-249-425-11	CARBON	4.7K	5%	1/4W	
R803	1-249-425-11	CARBON	4.7K	5%	1/4W	
R804	1-215-471-00	METAL	120K	1%	1/6W	
R805	1-249-433-11	CARBON	22K	5%	1/4W	
R806	1-249-429-11	CARBON	10K	5%	1/4W	
R807	1-215-469-00	METAL	100K	1%	1/6W	
R808	1-249-433-11	CARBON	22K	5%	1/4W	
R809	1-249-437-11	CARBON	47K	5%	1/4W	
R811	1-249-429-11	CARBON	10K	5%	1/4W	
R812	1-249-425-11	CARBON	4.7K	5%	1/4W	
R813	1-249-430-11	CARBON	12K	5%	1/4W	
R814	1-249-430-11	CARBON	12K	5%	1/4W	
R815	1-249-421-11	CARBON	2.2K	5%	1/4W	
R816	1-249-431-11	CARBON	15K	5%	1/4W	
R817	1-249-433-11	CARBON	22K	5%	1/4W	
R818	1-249-427-11	CARBON	6.8K	5%	1/4W	
R819	1-249-428-11	CARBON	8.2K	5%	1/4W	
R820	1-249-425-11	CARBON	4.7K	5%	1/4W	
R821	1-249-412-11	CARBON	390	5%	1/4W	
R822	1-249-412-11	CARBON	390	5%	1/4W	
R827	1-249-417-11	CARBON	1K	5%	1/4W	
R828	1-249-430-11	CARBON	12K	5%	1/4W	
R829	1-215-467-00	METAL	82K	1%	1/6W	
R832	1-215-479-00	METAL	270K	1%	1/6W	
R833	1-249-433-11	CARBON	22K	5%	1/4W	
R835	1-247-902-00	CARBON	910K	5%	1/4W	
R836	1-249-417-11	CARBON	1K	5%	1/4W	
R837	1-249-429-11	CARBON	10K	5%	1/4W	
R838	1-249-417-11	CARBON	1K	5%	1/4W	
R839	1-249-429-11	CARBON	10K	5%	1/4W	
R840	1-249-427-11	CARBON	6.8K	5%	1/4W	
R841	1-249-416-11	CARBON	820	5%	1/4W	
R843	1-249-417-11	CARBON	1K	5%	1/4W	
R844	1-249-428-11	CARBON	8.2K	5%	1/4W	
R845	1-249-417-11	CARBON	1K	5%	1/4W	
R846	1-249-428-11	CARBON	8.2K	5%	1/4W	
R847	1-249-418-11	CARBON	1.2K	5%	1/4W	
R848	1-249-425-11	CARBON	4.7K	5%	1/4W	
R849	1-249-433-11	CARBON	22K	5%	1/4W	

CRYSTAL

Ref.No.	Part No.	Description
X801	1-567-505-11	OSCILLATOR, CRYSTAL

****

*A-1165-028-A DA BOARD, COMPLETE
****

*4-363-146-00 HEAT SINK, V.OUT

CAPACITOR

Ref.No.	Part No.	Description			Remark
C1	1-123-381-00	ELECT	2.2MF	20%	50V
C2	1-136-153-00	FILM	0.01MF	5%	50V
C3	1-136-165-00	FILM	0.1MF	5%	50V
C4	1-136-157-00	FILM	0.022MF	5%	50V
C5	1-130-481-00	MYLAR	0.0068MF	5%	50V
C6	1-124-259-00	ELECT	4.7MF	20%	50V
C7	1-130-865-00	FILM	0.0033MF	5%	50V
C8	1-123-356-00	ELECT	10MF	20%	16V
C9	1-123-622-00	ELECT	22MF	20%	16V
C10	1-123-322-00	ELECT	330MF	20%	16V
C11	1-123-382-00	ELECT	3.3MF	20%	50V
C12	1-101-004-00	CERAMIC	0.01MF		50V

DA

Ref.No.	Part No.	Description			Remark
C13	1-123-381-00	ELECT	2.2MF	20%	50V
C14	1-102-820-00	CERAMIC	330PF	5%	50V
C15	1-130-479-00	MYLAR	0.0047MF	5%	50V
C16	1-102-816-00	CERAMIC	120PF	5%	50V
C17	1-136-153-00	FILM	0.01MF	5%	50V
C18	1-123-356-00	ELECT	10MF	20%	16V
C19	1-123-382-00	ELECT	3.3MF	20%	50V
C20	1-123-381-00	ELECT	2.2MF	20%	50V
C21	1-123-381-00	ELECT	2.2MF	20%	50V
C22	1-136-153-00	FILM	0.01MF	5%	50V
C23	1-123-356-00	ELECT	10MF	20%	16V
C24	1-123-318-00	ELECT	33MF	20%	16V
C25	1-136-153-00	FILM	0.01MF	5%	50V
C28	1-101-006-00	CERAMIC	0.047MF		50V
C29	1-123-382-00	ELECT	3.3MF	20%	50V
C34	1-124-259-00	ELECT	4.7MF	20%	50V
C35	1-101-361-00	CERAMIC	150PF	5%	50V
C36	1-102-816-00	CERAMIC	120PF	5%	50V
C37	1-136-161-00	FILM	0.047MF	5%	50V
C38	1-123-318-00	ELECT	33MF	20%	16V
C201	1-123-356-00	ELECT	10MF	20%	50V
C202	1-123-333-00	ELECT	100MF	20%	16V
C203	1-123-382-00	ELECT	3.3MF	20%	50V
C204	1-123-382-00	ELECT	3.3MF	20%	50V
C205	1-123-356-00	ELECT	10MF	20%	16V
C206	1-123-318-00	ELECT	33MF	20%	16V
C301	1-130-479-00	MYLAR	0.0047MF	5%	50V
C302	1-102-973-00	CERAMIC	100PF	5%	50V
C303	1-123-381-00	ELECT	2.2MF	20%	50V
C304	1-136-153-00	FILM	0.01MF	5%	50V
C305	1-130-473-00	MYLAR	0.0015MF	5%	50V
C306	1-123-381-00	ELECT	2.2MF	20%	50V
C308	1-123-381-00	ELECT	2.2MF	20%	50V
C309	1-136-153-00	FILM	0.01MF	5%	50V
C310	1-130-471-00	MYLAR	0.001MF	5%	50V
C311	1-101-361-00	CERAMIC	150PF	5%	50V
C312	1-136-153-00	FILM	0.01MF	5%	50V
C313	1-102-824-00	CERAMIC	470PF	5%	50V
C316	1-123-356-00	ELECT	10MF	20%	16V
C317	1-136-165-00	FILM	0.1MF	5%	50V
C318	1-123-330-00	ELECT	22MF	20%	16V
C401	1-130-477-00	MYLAR	0.0033MF	5%	50V
C402	1-136-153-00	FILM	0.01MF	5%	50V
C403	1-130-471-00	MYLAR	0.001MF	5%	50V
C404	1-136-161-00	FILM	0.047MF	5%	50V
C405	1-136-153-00	FILM	0.01MF	5%	50V
C406	1-123-381-00	ELECT	2.2MF	20%	50V
C407	1-123-381-00	ELECT	2.2MF	20%	50V
C408	1-136-153-00	FILM	0.01MF	5%	50V
C409	1-136-161-00	FILM	0.047MF	5%	50V
C410	1-136-161-00	FILM	0.047MF	5%	50V
C411	1-123-321-00	ELECT	220MF	20%	16V
C412	1-136-153-00	FILM	0.01MF	5%	50V
C413	1-136-157-00	FILM	0.022MF	5%	50V
C414	1-123-333-00	ELECT	100MF	20%	16V
C415	1-101-006-00	CERAMIC	0.047MF		50V
C416	1-123-333-00	ELECT	100MF	20%	16V
C417	1-123-333-00	ELECT	100MF	20%	16V
C418	1-123-333-00	ELECT	100MF	20%	16V
C419	1-123-333-00	ELECT	100MF	20%	16V
C420	1-123-333-00	ELECT	100MF	20%	16V
C421	1-123-356-00	ELECT	10MF	20%	16V
C422	1-136-161-00	FILM	0.047MF	5%	50V
C501	1-136-161-00	FILM	0.047MF	5%	50V
C502	1-136-161-00	FILM	0.047MF	5%	50V
C503	1-136-153-00	FILM	0.01MF	5%	50V
C504	1-124-259-00	ELECT	4.7MF	20%	50V
C506	1-130-471-00	MYLAR	0.001MF	5%	50V
C507	1-101-361-00	CERAMIC	150PF	5%	50V
C508	1-123-381-00	ELECT	2.2MF	20%	50V
C509	1-123-381-00	ELECT	2.2MF	20%	50V
C510	1-101-361-00	CERAMIC	150PF	5%	50V
C511	1-101-361-00	CERAMIC	150PF	5%	50V
C512	1-136-153-00	FILM	0.01MF	5%	50V
C513	1-123-381-00	ELECT	2.2MF	20%	50V
C514	1-136-153-00	FILM	0.01MF	5%	50V
C515	1-123-381-00	ELECT	2.2MF	20%	50V
C516	1-123-379-00	ELECT	0.47MF	20%	50V
C517	1-123-356-00	ELECT	10MF	20%	16V
C518	1-123-356-00	ELECT	10MF	20%	16V
C519	1-123-381-00	ELECT	2.2MF	20%	50V
C601	1-123-622-00	ELECT	22MF	20%	16V
C602	1-123-622-00	ELECT	22MF	20%	16V
C603	1-123-381-00	ELECT	2.2MF	20%	50V
C604	1-123-318-00	ELECT	33MF	20%	16V
C701	1-123-333-00	ELECT	100MF	20%	16V
C702	1-123-379-00	ELECT	0.47MF	20%	50V
C703	1-123-333-00	ELECT	100MF	20%	16V
C704	1-123-379-00	ELECT	0.47MF	20%	50V
C705	1-123-333-00	ELECT	100MF	20%	25V
C706	1-123-333-00	ELECT	100MF	20%	25V
C707	1-123-333-00	ELECT	100MF	20%	25V
C708	1-106-387-00	MYLAR	0.068MF	10%	200V
C709	1-106-387-00	MYLAR	0.068MF	10%	200V
C710	1-123-932-00	ELECT	4.7MF		160V
C711	1-123-333-00	ELECT	100MF	20%	25V
C810	1-123-382-00	ELECT	3.3MF	20%	50V
C811	1-123-382-00	ELECT	3.3MF	20%	50V
C812	1-123-382-00	ELECT	3.3MF	20%	50V
C813	1-101-004-00	CERAMIC	0.01MF		50V
C814	1-123-382-00	ELECT	3.3MF	20%	50V
C815	1-101-004-00	CERAMIC	0.01MF		50V
C816	1-123-382-00	ELECT	3.3MF	20%	50V
C817	1-101-004-00	CERAMIC	0.01MF		50V
C818	1-123-382-00	ELECT	3.3MF	20%	50V
C819	1-101-004-00	CERAMIC	0.01MF		50V

Ref.No.	Part No.	Description	Remark
C820	1-123-382-00	ELECT 3.3MF 20% 50V	
C821	1-101-004-00	CERAMIC 0.01MF 50V	
C822	1-123-382-00	ELECT 3.3MF 20% 50V	
C823	1-101-004-00	CERAMIC 0.01MF 50V	
C824	1-123-382-00	ELECT 3.3MF 20% 50V	
C825	1-101-004-00	CERAMIC 0.01MF 50V	
C826	1-123-382-00	ELECT 3.3MF 20% 50V	
C827	1-101-004-00	CERAMIC 0.01MF 50V	
C828	1-123-382-00	ELECT 3.3MF 20% 50V	
C829	1-101-004-00	CERAMIC 0.01MF 50V	
C830	1-101-004-00	CERAMIC 0.01MF 50V	
C831	1-101-004-00	CERAMIC 0.01MF 50V	
C832	1-123-382-00	ELECT 3.3MF 20% 50V	
C833	1-101-004-00	CERAMIC 0.01MF 50V	
C834	1-123-382-00	ELECT 3.3MF 20% 50V	
C835	1-101-004-00	CERAMIC 0.01MF 50V	
C836	1-123-382-00	ELECT 3.3MF 20% 50V	
C837	1-101-004-00	CERAMIC 0.01MF 50V	
C838	1-123-382-00	ELECT 3.3MF 20% 50V	
C839	1-101-004-00	CERAMIC 0.01MF 50V	
C840	1-123-382-00	ELECT 3.3MF 20% 50V	
C842	1-123-382-00	ELECT 3.3MF 20% 50V	
C843	1-101-004-00	CERAMIC 0.01MF 50V	
		DIODE	
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D3	8-719-109-84	DIODE RD5.1ES-B1	
D4	8-719-911-19	DIODE 1SS119	
D5	8-719-110-16	DIODE RD10ES-B1	
D6	8-719-911-19	DIODE 1SS119	
D9	8-719-110-17	DIODE RD10ES-B2	
D10	8-719-110-16	DIODE RD10ES-B1	
D11	8-719-911-19	DIODE 1SS119	
D12	8-719-911-19	DIODE 1SS119	
D13	8-719-911-19	DIODE 1SS119	
D14	8-719-901-27	DIODE MV-11VS	
D15	8-719-911-19	DIODE 1SS119	
D16	8-719-911-19	DIODE 1SS119	
D17	8-719-109-66	DIODE RD3.3ES-B2	
D201	8-719-911-19	DIODE 1SS119	
D202	8-719-911-19	DIODE 1SS119	
D203	8-719-911-19	DIODE 1SS119	
D301	8-719-911-19	DIODE 1SS119	
D302	8-719-911-19	DIODE 1SS119	
D303	8-719-110-16	DIODE RD10ES-B1	
D304	8-719-911-19	DIODE 1SS119	
D305	8-719-911-19	DIODE 1SS119	
D306	8-719-911-19	DIODE 1SS119	
D307	8-719-110-02	DIODE RD7.5ES-B1	
D401	8-719-911-19	DIODE 1SS119	
D402	8-719-109-84	DIODE RD5.1ES-B1	
D501	8-719-911-19	DIODE 1SS119	
D502	8-719-911-19	DIODE 1SS119	
D503	8-719-911-19	DIODE 1SS119	
D504	8-719-911-19	DIODE 1SS119	
D509	8-719-911-19	DIODE 1SS119	
D510	8-719-911-19	DIODE 1SS119	
D601	8-719-911-19	DIODE 1SS119	
D602	8-719-911-19	DIODE 1SS119	
D603	8-719-911-19	DIODE 1SS119	
D604	8-719-911-19	DIODE 1SS119	
D605	8-719-911-19	DIODE 1SS119	
D606	8-719-911-19	DIODE 1SS119	
D701	8-719-911-19	DIODE 1SS119	
D702	8-719-911-19	DIODE 1SS119	
D703	8-719-812-41	DIODE TLR124	
D704	8-719-812-41	DIODE TLR124	
D705	8-719-911-19	DIODE 1SS119	
D706	8-719-812-41	DIODE TLR124	
D707	8-719-918-77	DIODE V19G	
D708	8-719-918-77	DIODE V19G	
		CONNECTOR	
DA1	*1-566-063-11	PIN, CONNECTOR 11P	
DA2	*1-566-060-11	PIN, CONNECTOR 8P	
DA3	*1-566-057-11	PIN, CONNECTOR 5P	
DA4	*1-566-056-11	PIN, CONNECTOR 4P	
DA5	*1-566-055-11	PIN, CONNECTOR 3P	
DA6	*1-566-055-11	PIN, CONNECTOR 3P	
DA7	*1-566-056-11	PIN, CONNECTOR 4P	
DA8	*1-566-057-11	PIN, CONNECTOR 5P	
DA9	*1-566-056-11	PIN, CONNECTOR 4P	
DA10	*1-566-060-11	PIN, CONNECTOR 8P	
DA11	*1-566-060-11	PIN, CONNECTOR 8P	
DA12	*1-566-055-11	PIN, CONNECTOR 3P	
DA13	*1-506-348-XX	3P PLUG (L)	
DA14	*1-506-371-00	2P PLUG (L)	
DA15	*1-506-371-00	2P PLUG (L)	
DA16	*1-506-371-00	2P PLUG (L)	
		IC	
IC1	8-759-100-60	IC UPC1377C	
IC2	8-759-103-93	IC UPC393C	
IC3	8-759-115-55	IC UPC1555C	
IC4	8-759-109-82	IC UPC814C	
IC6	8-759-145-58	IC UPC4558C	
IC7	8-759-145-58	IC UPC4558C	
IC8	8-759-140-66	IC UPD4066BC	
IC9	8-752-203-00	IC CX22030	
IC10	8-759-345-38	IC HD14538BP	
IC11	8-759-340-53	IC HD14053BP	
IC201	8-759-145-58	IC UPC4558C	
IC202	8-759-145-58	IC UPC4558C	
IC203	8-759-145-58	IC UPC4558C	
IC301	8-759-131-11	IC UPC311C	

DA

Ref.No.	Part No.	Description	Remark
IC302	8-759-340-46	IC HD14046BP	
IC303	8-759-109-82	IC UPC814C	
IC304	8-759-109-82	IC UPC814C	
IC305	8-759-109-82	IC UPC814C	
IC307	8-759-109-82	IC UPC814C	
IC308	8-759-109-82	IC UPC814C	
IC309	8-759-103-93	IC UPC393C	
IC310	8-759-109-82	IC UPC814C	
IC401	8-759-145-58	IC UPC4558C	
IC402	8-759-115-55	IC UPC1555C	
IC403	8-759-115-55	IC UPC1555C	
IC404	8-759-145-58	IC UPC4558C	
IC405	8-759-145-58	IC UPC4558C	
IC406	8-759-145-58	IC UPC4558C	
IC407	8-759-103-93	IC UPC393C	
IC408	8-759-111-69	IC UPC1037HA	
IC409	8-759-145-58	IC UPC4558C	
IC410	8-759-145-58	IC UPC4558C	
IC501	8-759-103-93	IC UPC393C	
IC502	8-759-115-55	IC UPC1555C	
IC503	8-759-345-38	IC HD14538BP	
IC504	8-759-345-38	IC HD14538BP	
IC505	8-759-109-82	IC UPC814C	
IC506	8-759-109-82	IC UPC814C	
IC507	8-759-103-93	IC UPC393C	
IC601	8-759-103-93	IC UPC393C	
IC701	8-759-170-12	IC UPC78M12H	
IC702	8-759-700-24	IC NJM79M12A	
IC703	8-759-103-93	IC UPC393C	

COIL

Ref.No.	Part No.	Description	Remark
L701	1-459-155-00	COIL (WITH CORE) 45UH	
L702	1-459-155-00	COIL (WITH CORE) 45UH	
L703	1-459-104-00	COIL, DUST CORE	
L704	1-459-104-00	COIL, DUST CORE	
L801	1-459-367-00	COIL, VAR, FERRITE (HWC)	
L802	1-459-367-00	COIL, VAR, FERRITE (HWC)	
L803	1-459-367-00	COIL, VAR, FERRITE (HWC)	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-178-54	TRANSISTOR 2SC2785	
Q2	8-729-178-54	TRANSISTOR 2SC2785	
Q4	8-729-178-54	TRANSISTOR 2SC2785	
Q6	8-729-178-54	TRANSISTOR 2SC2785	
Q7	8-729-117-54	TRANSISTOR 2SA1175	
Q8	8-729-117-54	TRANSISTOR 2SA1175	
Q9	8-729-117-54	TRANSISTOR 2SA1175	
Q10	8-729-178-54	TRANSISTOR 2SC2785	
Q11	8-729-117-54	TRANSISTOR 2SA1175	
Q12	8-729-178-54	TRANSISTOR 2SC2785	
Q13	8-729-178-54	TRANSISTOR 2SC2785	
Q14	8-729-117-54	TRANSISTOR 2SA1175	
Q15	8-729-117-54	TRANSISTOR 2SA1175	
Q16	8-729-178-54	TRANSISTOR 2SC2785	
Q17	8-729-117-54	TRANSISTOR 2SA1175	
Q201	8-729-213-12	TRANSISTOR 2SC2230A	
Q202	8-729-178-54	TRANSISTOR 2SC2785	
Q203	8-729-178-54	TRANSISTOR 2SC2785	
Q204	8-729-178-54	TRANSISTOR 2SC2785	
Q205	8-729-900-89	TRANSISTOR DTC144ES	
Q301	8-729-117-54	TRANSISTOR 2SA1175	
Q302	8-729-117-54	TRANSISTOR 2SA1175	
Q303	8-729-178-54	TRANSISTOR 2SC2785	
Q304	8-729-178-54	TRANSISTOR 2SC2785	
Q305	8-729-117-54	TRANSISTOR 2SA1175	
Q306	8-729-178-54	TRANSISTOR 2SC2785	
Q307	8-729-178-54	TRANSISTOR 2SC2785	
Q308	8-729-178-54	TRANSISTOR 2SC2785	
Q310	8-729-115-10	TRANSISTOR 2SK105A-10	
Q311	8-729-115-10	TRANSISTOR 2SK105A-10	
Q312	8-729-117-54	TRANSISTOR 2SA1175	
Q313	8-729-900-89	TRANSISTOR DTC144ES	
Q401	8-729-178-54	TRANSISTOR 2SC2785	
Q402	8-729-178-54	TRANSISTOR 2SC2785	
Q403	8-729-178-54	TRANSISTOR 2SC2785	
Q404	8-729-115-10	TRANSISTOR 2SK105A-10	
Q405	8-729-178-54	TRANSISTOR 2SC2785	
Q406	8-729-178-54	TRANSISTOR 2SC2785	
Q407	8-729-115-10	TRANSISTOR 2SK105A-10	
Q408	8-729-900-89	TRANSISTOR DTC144ES	
Q501	8-729-117-54	TRANSISTOR 2SA1175	
Q502	8-729-178-54	TRANSISTOR 2SC2785	
Q503	8-729-178-54	TRANSISTOR 2SC2785	
Q504	8-729-178-54	TRANSISTOR 2SC2785	
Q505	8-729-178-54	TRANSISTOR 2SC2785	
Q506	8-729-178-54	TRANSISTOR 2SC2785	
Q508	8-729-900-89	TRANSISTOR DTC144ES	
Q509	8-729-900-89	TRANSISTOR DTC144ES	
Q601	8-729-178-54	TRANSISTOR 2SC2785	
Q602	8-729-178-54	TRANSISTOR 2SC2785	
Q603	8-729-178-54	TRANSISTOR 2SC2785	
Q604	8-729-178-54	TRANSISTOR 2SC2785	
Q605	8-729-178-54	TRANSISTOR 2SC2785	
Q701	8-729-117-54	TRANSISTOR 2SA1175	
Q702	8-729-117-54	TRANSISTOR 2SA1175	
Q703	8-729-117-54	TRANSISTOR 2SA1175	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-405-11	CARBON	100	5%	1/4W	
R2	1-249-417-11	CARBON	1K	5%	1/4W	
R3	1-249-405-11	CARBON	100	5%	1/4W	
R4	1-249-417-11	CARBON	1K	5%	1/4W	
R5	1-249-410-11	CARBON	270	5%	1/4W	
R6	1-249-411-11	CARBON	330	5%	1/4W	
R7	1-249-421-11	CARBON	2.2K	5%	1/4W	
R8	1-247-895-00	CARBON	470K	5%	1/4W	

DA

Ref.No.	Part No.	Description				Remark
R9	1-249-417-11	CARBON	1K	5%	1/4W	
R10	1-249-429-11	CARBON	10K	5%	1/4W	
R11	1-249-440-11	CARBON	82K	5%	1/4W	
R12	1-249-435-11	CARBON	33K	5%	1/4W	
R13	1-249-423-11	CARBON	3.3K	5%	1/4W	
R14	1-249-440-11	CARBON	82K	5%	1/4W	
R15	1-249-433-11	CARBON	22K	5%	1/4W	
R16	1-249-431-11	CARBON	15K	5%	1/4W	
R17	1-249-425-11	CARBON	4.7K	5%	1/4W	
R18	1-249-420-11	CARBON	1.8K	5%	1/4W	
R19	1-249-429-11	CARBON	10K	5%	1/4W	
R20	1-249-435-11	CARBON	33K	5%	1/4W	
R21	1-249-429-11	CARBON	10K	5%	1/4W	
R22	1-249-425-11	CARBON	4.7K	5%	1/4W	
R23	1-249-425-11	CARBON	4.7K	5%	1/4W	
R24	1-249-425-11	CARBON	4.7K	5%	1/4W	
R25	1-249-425-11	CARBON	4.7K	5%	1/4W	
R26	1-249-435-11	CARBON	33K	5%	1/4W	
※R30	1-215-439-00	METAL	5.6K	1%	1/6W	
※R30	1-215-441-00	METAL	6.8K	1%	1/6W	
※R30	1-215-443-00	METAL	8.2K	1%	1/6W	
※R30	1-215-445-00	METAL	10K	1%	1/6W	
※R30	1-215-447-00	METAL	12K	1%	1/6W	
※R30	1-215-449-00	METAL	15K	1%	1/6W	
※R30	1-215-451-00	METAL	18K	1%	1/6W	
※R30	1-215-453-00	METAL	22K	1%	1/6W	
※R30	1-215-454-00	METAL	24K	1%	1/6W	
※R30	1-215-455-00	METAL	27K	1%	1/6W	
※R30	1-215-456-00	METAL	30K	1%	1/6W	
※R30	1-215-457-00	METAL	33K	1%	1/6W	
※R30	1-215-458-00	METAL	36K	1%	1/6W	
※R31	1-215-373-31	METAL	10	1%	1/6W	
※R31	1-215-411-00	METAL	390	1%	1/6W	
※R31	1-215-413-00	METAL	470	1%	1/6W	
※R31	1-215-415-00	METAL	560	1%	1/6W	
※R31	1-215-417-00	METAL	680	1%	1/6W	
※R31	1-215-419-00	METAL	820	1%	1/6W	
※R31	1-215-421-00	METAL	1K	1%	1/6W	
※R31	1-215-423-00	METAL	1.2K	1%	1/6W	
※R31	1-215-425-00	METAL	1.5K	1%	1/6W	
※R31	1-215-427-00	METAL	1.8K	1%	1/6W	
※R31	1-215-429-00	METAL	2.2K	1%	1/6W	
※R31	1-215-431-00	METAL	2.7K	1%	1/6W	
※R31	1-215-433-00	METAL	3.3K	1%	1/6W	
※R31	1-215-435-00	METAL	3.9K	1%	1/6W	
R32	1-215-467-00	METAL	82K	1%	1/6W	
R33	1-249-417-11	CARBON	1K	5%	1/4W	
R34	1-215-445-00	METAL	10K	1%	1/6W	
R35	1-215-437-00	METAL	4.7K	1%	1/6W	
R36	1-215-445-00	METAL	10K	1%	1/6W	
R37	1-215-445-00	METAL	10K	1%	1/6W	
R38	1-249-421-11	CARBON	2.2K	5%	1/4W	
R39	1-249-421-11	CARBON	2.2K	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R40	1-249-433-11	CARBON	22K	5%	1/4W	
R42	1-249-417-11	CARBON	1K	5%	1/4W	
R43	1-249-417-11	CARBON	1K	5%	1/4W	
R53	1-215-433-00	METAL	3.3K	1%	1/6W	
R54	1-215-432-00	METAL	3K	1%	1/6W	
R55	1-215-430-00	MITAL	2.4K	1%	1/6W	
R56	1-215-393-00	METAL	68	1%	1/6W	
R57	1-215-431-00	METAL	2.7K	1%	1/6W	
R58	1-215-405-00	METAL	220	1%	1/6W	
R59	1-215-439-00	METAL	5.6K	1%	1/6W	
R60	1-215-445-00	METAL	10K	1%	1/6W	
R61	1-249-421-11	CARBON	2.2K	5%	1/4W	
R62	1-215-433-00	METAL	3.3K	1%	1/6W	
R64	1-215-433-00	METAL	3.3K	1%	1/6W	
R65	1-215-479-00	METAL	270K	1%	1/6W	
R66	1-249-429-11	CARBON	10K	5%	1/4W	
R67	1-215-445-00	METAL	10K	1%	1/6W	
R68	1-249-421-11	CARBON	2.2K	5%	1/4W	
R69	1-215-455-00	METAL	27K	1%	1/6W	
R70	1-215-455-00	METAL	27K	1%	1/6W	
R71	1-249-405-11	CARBON	100	5%	1/4W	
R72	1-249-405-11	CARBON	100	5%	1/4W	
R73	1-215-445-00	METAL	10K	1%	1/6W	
R74	1-215-485-00	METAL	470K	1%	1/6W	
R75	1-215-455-00	METAL	27K	1%	1/6W	
R76	1-215-433-00	METAL	3.3K	1%	1/6W	
R77	1-215-411-00	METAL	390	1%	1/6W	
☒R78 ⚠	[illegible]	METAL	[illegible]	[illegible]	1/6W	
R79	1-249-417-11	CARBON	1K	5%	1/4W	
R80	1-249-429-11	CARBON	10K	5%	1/4W	
R81	1-249-433-11	CARBON	22K	5%	1/4W	
R82	1-249-434-11	CARBON	27K	5%	1/4W	
R83	1-249-434-11	CARBON	27K	5%	1/4W	
R84	1-249-417-11	CARBON	1K	5%	1/4W	
R85	1-215-438-00	METAL	5.1K	1%	1/6W	
R86	1-215-439-00	METAL	5.6K	1%	1/6W	
R87	1-215-409-00	METAL	330	1%	1/6W	
R88	1-215-427-00	METAL	1.8K	1%	1/6W	
R89	1-215-435-00	METAL	3.9K	1%	1/6W	
R90	1-249-423-11	CARBON	3.3K	5%	1/4W	
R91	1-249-433-11	CARBON	22K	5%	1/4W	
※R92	1-215-401-11	METAL	150	1%	1/6W	
※R92	1-215-403-00	METAL	180	1%	1/6W	
※R92	1-215-409-00	METAL	330	1%	1/6W	
※R92	1-215-411-00	METAL	390	1%	1/6W	
※R92	1-215-413-00	METAL	470	1%	1/6W	
※R92	1-215-415-00	METAL	560	1%	1/6W	
※R92	1-215-417-00	METAL	680	1%	1/6W	
※R92	1-215-419-00	METAL	820	1%	1/6W	
※R92	1-215-421-00	METAL	1K	1%	1/6W	
※R92	1-215-422-00	METAL	1.1K	1%	1/6W	
※R92	1-215-423-00	METAL	1.2K	1%	1/6W	
※R92	1-215-424-00	METAL	1.3K	1%	1/6W	

- The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- ※ : Selected to yield optimum performance.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

DA

Ref.No.	Part No.	Description				Remark
※R92	1-215-425-00	METAL	1.5K	1%	1/6W	
※R93	1-215-373-31	METAL	10	1%	1/6W	
※R93	1-215-377-00	METAL	15	1%	1/6W	
※R93	1-215-381-00	METAL	22	1%	1/6W	
※R93	1-215-383-00	METAL	27	1%	1/6W	
※R93	1-215-385-00	METAL	33	1%	1/6W	
※R93	1-215-387-00	METAL	39	1%	1/6W	
※R93	1-215-389-00	METAL	47	1%	1/6W	
※R93	1-215-391-00	METAL	56	1%	1/6W	
※R93	1-215-393-00	METAL	68	1%	1/6W	
※R93	1-215-395-00	METAL	82	1%	1/6W	
※R93	1-215-397-00	METAL	100	1%	1/6W	
※R93	1-215-399-00	METAL	120	1%	1/6W	
※R93	1-215-401-11	METAL	150	1%	1/6W	
※R93	1-215-403-00	METAL	180	1%	1/6W	
※R93	1-215-405-00	METAL	220	1%	1/6W	
※R93	1-215-407-00	METAL	270	1%	1/6W	
※R93	1-215-418-00	METAL	750	1%	1/6W	
※R93	1-215-420-00	METAL	910	1%	1/6W	
R94	1-215-445-00	METAL	10K	1%	1/6W	
R95	1-215-435-00	METAL	3.9K	1%	1/6W	
R96	1-249-421-11	CARBON	2.2K	5%	1/4W	
R97	1-249-421-11	CARBON	2.2K	5%	1/4W	
R98	1-249-429-11	CARBON	10K	5%	1/4W	
R99	1-249-429-11	CARBON	10K	5%	1/4W	
R100	1-249-429-11	CARBON	10K	5%	1/4W	
R101	1-215-413-00	METAL	470	1%	1/6W	
R102	1-215-429-00	METAL	2.2K	1%	1/6W	
R103	1-215-453-00	METAL	22K	1%	1/6W	
R104	1-249-430-11	CARBON	12K	5%	1/4W	
R105	1-215-429-00	METAL	2.2K	1%	1/6W	
R106	1-215-429-00	METAL	2.2K	1%	1/6W	
R107	1-249-433-11	CARBON	22K	5%	1/4W	
R108	1-216-509-11	METAL OXIDE	5.6K	5%	5W	F
R109	1-249-417-11	CARBON	1K	5%	1/4W	
R110	1-249-417-11	CARBON	1K	5%	1/4W	
R111	1-249-405-11	CARBON	100	5%	1/4W	
R112	1-247-887-00	CARBON	220K	5%	1/4W	
R113	1-249-417-11	CARBON	1K	5%	1/4W	
R114	1-249-417-11	CARBON	1K	5%	1/4W	
R201	1-214-599-00	METAL OXIDE	68K	5%	1W	F
R202	1-249-397-11	CARBON	22	5%	1/4W	
R203	1-249-420-11	CARBON	1.8K	5%	1/4W	
R204	1-249-417-11	CARBON	1K	5%	1/4W	
R205	1-249-441-11	CARBON	100K	5%	1/4W	
R206	1-249-441-11	CARBON	100K	5%	1/4W	
R207	1-249-417-11	CARBON	1K	5%	1/4W	
R208	1-249-437-11	CARBON	47K	5%	1/4W	
R209	1-215-431-00	METAL	2.7K	1%	1/6W	
R210	1-249-431-11	CARBON	15K	5%	1/4W	
R211	1-249-424-11	CARBON	3.9K	5%	1/4W	
R212	1-249-418-11	CARBON	1.2K	5%	1/4W	
R213	1-247-849-00	CARBON	5.6K	5%	1/4W	
R214	1-249-427-11	CARBON	6.8K	5%	1/4W	
R215	1-249-418-11	CARBON	1.2K	5%	1/4W	
R216	1-215-421-00	METAL	1K	1%	1/6W	
R217	1-215-415-00	METAL	560	1%	1/6W	
R218	1-215-421-00	METAL	1K	1%	1/6W	
R219	1-215-421-00	METAL	1K	1%	1/6W	
R220	1-249-422-11	CARBON	2.7K	5%	1/4W	
R221	1-249-418-11	CARBON	1.2K	5%	1/4W	
R222	1-215-405-00	METAL	220	1%	1/6W	
R223	1-249-418-11	CARBON	1.2K	5%	1/4W	
R224	1-215-433-00	METAL	3.3K	1%	1/6W	
R225	1-215-431-00	METAL	2.7K	1%	1/6W	
R226	1-215-461-00	METAL	47K	1%	1/6W	
R227	1-215-421-00	METAL	1K	1%	1/6W	
R228	1-249-429-11	CARBON	10K	5%	1/4W	
R229	1-215-437-00	METAL	4.7K	1%	1/6W	
R237	1-215-437-00	METAL	4.7K	1%	1/6W	
R301	1-249-431-11	CARBON	15K	5%	1/4W	
R302	1-249-429-11	CARBON	10K	5%	1/4W	
R303	1-249-421-11	CARBON	2.2K	5%	1/4W	
R304	1-249-423-11	CARBON	3.3K	5%	1/4W	
R305	1-249-429-11	CARBON	10K	5%	1/4W	
R306	1-249-418-11	CARBON	1.2K	5%	1/4W	
R307	1-249-419-11	CARBON	1.5K	5%	1/4W	
R308	1-249-419-11	CARBON	1.5K	5%	1/4W	
R309	1-249-424-11	CARBON	3.9K	5%	1/4W	
R310	1-249-418-11	CARBON	1.2K	5%	1/4W	
R311	1-249-419-11	CARBON	1.5K	5%	1/4W	
R312	1-249-421-11	CARBON	2.2K	5%	1/4W	
R313	1-249-419-11	CARBON	1.5K	5%	1/4W	
R314	1-249-417-11	CARBON	1K	5%	1/4W	
R315	1-249-421-11	CARBON	2.2K	5%	1/4W	
R316	1-249-429-11	CARBON	10K	5%	1/4W	
R317	1-249-429-11	CARBON	10K	5%	1/4W	
R318	1-249-433-11	CARBON	22K	5%	1/4W	
R319	1-249-417-11	CARBON	1K	5%	1/4W	
R320	1-249-417-11	CARBON	1K	5%	1/4W	
R321	1-215-487-00	CARBON	560K	5%	1/4W	
R323	1-249-417-11	CARBON	1K	5%	1/4W	
R324	1-249-428-11	CARBON	8.2K	5%	1/4W	
R325	1-249-440-11	CARBON	82K	5%	1/4W	
R326	1-249-435-11	CARBON	33K	5%	1/4W	
R327	1-215-451-00	METAL	18K	1%	1/6W	
R328	1-215-447-00	METAL	12K	1%	1/6W	
R329	1-215-451-00	METAL	18K	1%	1/6W	
R330	1-215-449-00	METAL	15K	1%	1/6W	
R331	1-215-437-00	METAL	4.7K	1%	1/6W	
R332	1-215-437-00	METAL	4.7K	1%	1/6W	
R333	1-215-429-00	METAL	2.2K	1%	1/6W	
R334	1-215-437-00	METAL	4.7K	1%	1/6W	
R335	1-215-433-00	METAL	3.3K	1%	1/6W	
R336	1-215-445-00	METAL	10K	1%	1/6W	
R347	1-215-435-00	METAL	3.9K	1%	1/6W	

- ※ : Selected to yield optimum performance.

Ref.No.	Part No.	Description			Remark
R348	1-215-445-00	METAL	10K	1%	1/6W
R349	1-215-433-00	METAL	3.3K	1%	1/6W
R350	1-249-429-11	CARBON	10K	5%	1/4W
R351	1-215-493-00	CARBON	1M	5%	1/4W
R352	1-249-393-11	CARBON	10	5%	1/4W
R353	1-215-445-00	METAL	10K	1%	1/6W
R354	1-215-437-00	METAL	4.7K	1%	1/6W
R355	1-215-445-00	METAL	10K	1%	1/6W
R356	1-215-449-00	METAL	15K	1%	1/6W
R359	1-215-445-00	METAL	10K	1%	1/6W
R360	1-215-433-00	METAL	3.3K	1%	1/6W
R362	1-249-423-11	CARBON	3.3K	5%	1/4W
R363	1-249-423-11	CARBON	3.3K	5%	1/4W
R365	1-215-445-00	METAL	10K	1%	1/6W
R366	1-249-393-11	CARBON	10	5%	1/4W
R367	1-249-429-11	CARBON	10K	5%	1/4W
R368	1-215-493-00	CARBON	1M	5%	1/4W
R372	1-215-437-00	METAL	4.7K	1%	1/6W
R374	1-215-461-00	METAL	47K	1%	1/6W
R375	1-215-445-00	METAL	10K	1%	1/6W
R376	1-215-437-00	METAL	4.7K	1%	1/6W
R377	1-215-445-00	METAL	10K	1%	1/6W
R378	1-215-437-00	METAL	4.7K	1%	1/6W
R379	1-215-445-00	METAL	10K	1%	1/6W
R380	1-215-437-00	METAL	4.7K	1%	1/6W
R382	1-215-445-00	METAL	10K	1%	1/6W
R383	1-215-445-00	METAL	10K	1%	1/6W
R384	1-215-437-00	METAL	4.7K	1%	1/6W
R385	1-249-429-11	CARBON	10K	5%	1/4W
R386	1-249-441-11	CARBON	100K	5%	1/4W
R387	1-249-429-11	CARBON	10K	5%	1/4W
R388	1-249-431-11	CARBON	15K	5%	1/4W
R389	1-249-429-11	CARBON	10K	5%	1/4W
R390	1-249-437-11	CARBON	47K	5%	1/4W
R391	1-249-429-11	CARBON	10K	5%	1/4W
R392	1-249-431-11	CARBON	15K	5%	1/4W
R393	1-215-449-00	METAL	15K	1%	1/6W
R401	1-249-429-11	CARBON	10K	5%	1/4W
R402	1-249-429-11	CARBON	10K	5%	1/4W
R403	1-215-453-00	METAL	22K	1%	1/6W
R404	1-215-433-00	METAL	3.3K	1%	1/6W
R405	1-249-417-11	CARBON	1K	5%	1/4W
R406	1-249-417-11	CARBON	1K	5%	1/4W
R407	1-249-417-11	CARBON	1K	5%	1/4W
R408	1-215-467-00	METAL	82K	1%	1/6W
R409	1-215-489-00	METAL	680K	1%	1/6W
R410	1-215-453-00	METAL	22K	1%	1/6W
R411	1-249-429-11	CARBON	10K	5%	1/4W
R412	1-249-417-11	CARBON	1K	5%	1/4W
R413	1-249-429-11	CARBON	10K	5%	1/4W
R414	1-249-417-11	CARBON	1K	5%	1/4W
R415	1-215-437-00	METAL	4.7K	1%	1/6W
R416	1-215-437-00	METAL	4.7K	1%	1/6W

Ref.No.	Part No.	Description			Remark
R417	1-249-437-11	CARBON	47K	5%	1/4W
R418	1-249-433-11	CARBON	22K	5%	1/4W
R419	1-215-471-00	METAL	120K	1%	1/6W
R420	1-249-429-11	CARBON	10K	5%	1/4W
R421	1-215-445-00	METAL	10K	1%	1/6W
R422	1-215-445-00	METAL	10K	1%	1/6W
R423	1-215-443-00	METAL	8.2K	1%	1/6W
R424	1-249-418-11	CARBON	1.2K	5%	1/4W
R425	1-215-447-00	METAL	12K	1%	1/6W
R426	1-215-421-00	METAL	1K	1%	1/6W
R427	1-215-461-00	METAL	47K	1%	1/6W
R428	1-215-483-00	METAL	390K	1%	1/6W
R429	1-215-421-00	METAL	1K	1%	1/6W
R430	1-215-439-00	METAL	5.6K	1%	1/6W
R431	1-215-443-00	METAL	8.2K	1%	1/6W
R432	1-215-455-00	METAL	27K	1%	1/6W
R433	1-215-469-00	METAL	100K	1%	1/6W
R434	1-215-397-00	METAL	100	1%	1/6W
R436	1-215-429-00	METAL	2.2K	1%	1/6W
R437	1-215-429-00	METAL	2.2K	1%	1/6W
R438	1-215-413-00	METAL	470	1%	1/6W
R439	1-215-445-00	METAL	10K	1%	1/6W
R440	1-215-437-00	METAL	4.7K	1%	1/6W
R441	1-215-445-00	METAL	10K	1%	1/6W
R442	1-249-429-11	CARBON	10K	5%	1/4W
R443	1-249-429-11	CARBON	10K	5%	1/4W
R444	1-249-425-11	CARBON	4.7K	5%	1/4W
R445	1-215-431-00	METAL	2.7K	1%	1/6W
R445	1-249-425-11	CARBON	4.7K	5%	1/4W
R446	1-215-449-00	METAL	15K	1%	1/6W
R447	1-215-445-00	METAL	10K	1%	1/6W
R448	1-215-445-00	METAL	10K	1%	1/6W
R449	1-249-429-11	CARBON	10K	5%	1/4W
R450	1-249-429-11	CARBON	10K	5%	1/4W
R451	1-215-493-00	CARBON	1M	5%	1/4W
R452	1-249-430-11	CARBON	12K	5%	1/4W
R453	1-249-431-11	CARBON	15K	5%	1/4W
R454	1-215-449-00	METAL	15K	1%	1/6W
R456	1-215-413-00	METAL	470	1%	1/6W
R457	1-247-887-00	CARBON	220K	5%	1/4W
R458	1-215-413-00	METAL	470	1%	1/6W
R459	1-249-429-11	CARBON	10K	5%	1/4W
R460	1-215-431-00	METAL	2.7K	1%	1/6W
R461	1-215-459-00	METAL	39K	1%	1/6W
R462	1-215-429-00	METAL	2.2K	1%	1/6W
R463	1-249-423-11	CARBON	3.3K	5%	1/4W
R464	1-249-429-11	CARBON	10K	5%	1/4W
R465	1-249-429-11	CARBON	10K	5%	1/4W
R466	1-215-445-00	METAL	10K	1%	1/6W
R467	1-215-445-00	METAL	10K	1%	1/6W
R468	1-215-445-00	METAL	10K	1%	1/6W
R469	1-215-445-00	METAL	10K	1%	1/6W
R470	1-215-437-00	METAL	4.7K	1%	1/6W

DA

Ref.No.	Part No.	Description				Remark
R471	1-215-449-00	METAL	15K	1%	1/6W	
R501	1-249-441-11	CARBON	100K	5%	1/4W	
R502	1-249-425-11	CARBON	4.7K	5%	1/4W	
R503	1-249-429-11	CARBON	10K	5%	1/4W	
R504	1-247-849-00	CARBON	5.6K	5%	1/4W	
R505	1-249-429-11	CARBON	10K	5%	1/4W	
R506	1-249-430-11	CARBON	12K	5%	1/4W	
R507	1-249-429-11	CARBON	10K	5%	1/4W	
R508	1-249-417-11	CARBON	1K	5%	1/4W	
R509	1-249-441-11	CARBON	100K	5%	1/4W	
R510	1-215-437-00	METAL	4.7K	1%	1/6W	
R511	1-215-421-00	METAL	1K	1%	1/6W	
R512	1-215-443-00	METAL	8.2K	1%	1/6W	
R513	1-249-429-11	CARBON	10K	5%	1/4W	
R514	1-215-445-00	METAL	10K	1%	1/6W	
R515	1-249-417-11	CARBON	1K	5%	1/4W	
R516	1-249-417-11	CARBON	1K	5%	1/4W	
R517	1-249-421-11	CARBON	2.2K	5%	1/4W	
R518	1-249-421-11	CARBON	2.2K	5%	1/4W	
R519	1-215-457-00	METAL	33K	1%	1/6W	
R520	1-215-463-00	METAL	56K	1%	1/6W	
R521	1-215-441-00	METAL	6.8K	1%	1/6W	
R523	1-249-429-11	CARBON	10K	5%	1/4W	
R524	1-249-429-11	CARBON	10K	5%	1/4W	
R525	1-249-425-11	CARBON	4.7K	5%	1/4W	
R526	1-215-469-00	METAL	100K	1%	1/6W	
R527	1-215-469-00	METAL	100K	1%	1/6W	
R528	1-249-429-11	CARBON	10K	5%	1/4W	
R529	1-249-430-11	CARBON	12K	5%	1/4W	
R530	1-249-421-11	CARBON	2.2K	5%	1/4W	
R531	1-249-430-11	CARBON	12K	5%	1/4W	
R532	1-249-421-11	CARBON	2.2K	5%	1/4W	
R534	1-249-429-11	CARBON	10K	5%	1/4W	
R535	1-249-421-11	CARBON	2.2K	5%	1/4W	
R536	1-249-421-11	CARBON	2.2K	5%	1/4W	
R537	1-249-425-11	CARBON	4.7K	5%	1/4W	
R538	1-249-429-11	CARBON	10K	5%	1/4W	
R539	1-249-429-11	CARBON	10K	5%	1/4W	
R540	1-249-429-11	CARBON	10K	5%	1/4W	
R541	1-249-417-11	CARBON	1K	5%	1/4W	
R542	1-249-429-11	CARBON	10K	5%	1/4W	
R543	1-249-429-11	CARBON	10K	5%	1/4W	
R544	1-249-419-11	CARBON	1.5K	5%	1/4W	
R545	1-249-429-11	CARBON	10K	5%	1/4W	
R546	1-249-429-11	CARBON	10K	5%	1/4W	
R547	1-215-424-00	METAL	1.3K	1%	1/6W	
R548	1-249-437-11	CARBON	47K	5%	1/4W	
R549	1-249-425-11	CARBON	4.7K	5%	1/4W	
R550	1-249-429-11	CARBON	10K	5%	1/4W	
R551	1-249-429-11	CARBON	10K	5%	1/4W	
R552	1-249-429-11	CARBON	10K	5%	1/4W	
R553	1-249-417-11	CARBON	1K	5%	1/4W	
R560	1-215-449-00	METAL	15K	1%	1/6W	

Ref.No.	Part No.	Description				Remark
R562	1-249-429-11	CARBON	10K	5%	1/4W	
R601	1-249-441-11	CARBON	100K	5%	1/4W	
R602	1-249-429-11	CARBON	10K	5%	1/4W	
R603	1-249-419-11	CARBON	1.5K	5%	1/4W	
R604	1-249-417-11	CARBON	1K	5%	1/4W	
R605	1-249-431-11	CARBON	15K	5%	1/4W	
R606	1-249-421-11	CARBON	2.2K	5%	1/4W	
R608	1-249-441-11	CARBON	100K	5%	1/4W	
R609	1-247-887-00	CARBON	220K	5%	1/4W	
R610	1-249-434-11	CARBON	27K	5%	1/4W	
R611	1-249-441-11	CARBON	100K	5%	1/4W	
R612	1-249-435-11	CARBON	33K	5%	1/4W	
R613	1-249-430-11	CARBON	12K	5%	1/4W	
R614	1-249-405-11	CARBON	100	5%	1/4W	
R615	1-249-429-11	CARBON	10K	5%	1/4W	
R616	1-249-419-11	CARBON	1.5K	5%	1/4W	
R617	1-215-449-00	METAL	15K	1%	1/6W	
R618	1-215-439-00	METAL	5.6K	1%	1/6W	
R619	1-215-409-00	METAL	330	1%	1/6W	
R620	1-215-437-00	METAL	4.7K	1%	1/6W	
R621	1-249-429-11	CARBON	10K	5%	1/4W	
R622	1-249-417-11	CARBON	1K	5%	1/4W	
R623	1-249-418-11	CARBON	1.2K	5%	1/4W	
R624	1-249-429-11	CARBON	10K	5%	1/4W	
R701	1-249-436-11	CARBON	39K	5%	1/4W	
R702	1-249-436-11	CARBON	39K	5%	1/4W	
R703	1-249-431-11	CARBON	15K	5%	1/4W	
R704	1-249-419-11	CARBON	1.5K	5%	1/4W	
R705	1-249-425-11	CARBON	4.7K	5%	1/4W	
R706	1-249-429-11	CARBON	10K	5%	1/4W	
R707	1-249-429-11	CARBON	10K	5%	1/4W	
R708	1-249-429-11	CARBON	10K	5%	1/4W	
R709	1-249-417-11	CARBON	1K	5%	1/4W	
R710	1-249-419-11	CARBON	1.5K	5%	1/4W	
R711	1-249-425-11	CARBON	4.7K	5%	1/4W	
R712	1-249-429-11	CARBON	10K	5%	1/4W	
R713	1-249-429-11	CARBON	10K	5%	1/4W	
R714	1-249-429-11	CARBON	10K	5%	1/4W	
R715	1-249-417-11	CARBON	1K	5%	1/4W	
R716	1-249-419-11	CARBON	1.5K	5%	1/4W	
R717	1-215-899-11	METAL OXIDE	15K	5%	2W	F
R801	1-247-716-11	CARBON	1.8K	5%	1/4W	F
R802	1-247-716-11	CARBON	1.8K	5%	1/4W	F
R803	1-247-716-11	CARBON	1.8K	5%	1/4W	F

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV1	1-224-874-41	RES, ADJ, METAL GLAZE 1M	
RV2	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV401	1-224-250-XX	RES, ADJ, METAL GLAZE 2.2K	
RV402	1-224-254-XX	RES, ADJ, METAL GLAZE 47K	
RV403	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV501	1-224-254-XX	RES, ADJ, METAL GLAZE 47K	
RV502	1-224-248-XX	RES, ADJ, METAL GLAZE 470	

Ref.No.	Part No.	Description			Remark
RV503	1-224-248-XX	RES, ADJ, METAL GLAZE 470			
RV504	1-224-134-XX	RES, ADJ, METAL GLAZE 470K			
RV505	1-224-254-XX	RES, ADJ, METAL GLAZE 47K			

****

*A-1165-030-A DB BOARD, COMPLETE
****

Part No.	Description
*1-533-146-00	HOLDER, FUSE
2-832-007-00	BUSHING (K), INSULATING
*4-378-621-01	RETAINER, TR

CAPACITOR

Ref.No.	Part No.	Description			Remark
C1	1-123-379-00	ELECT	0.47MF	20%	50V
C2	1-123-333-00	ELECT	100MF	20%	16V
C3	1-123-379-00	ELECT	0.47MF	20%	50V
C4	1-123-333-00	ELECT	100MF	20%	16V
C5	1-123-661-00	ELECT	100MF	20%	6.3V
C6	1-123-356-00	ELECT	10MF	20%	16V
C7	1-123-356-00	ELECT	10MF	20%	16V
C8	1-123-661-00	ELECT	100MF	20%	6.3V
C9	1-101-006-00	CERAMIC	0.047MF		50V
C10	1-101-006-00	CERAMIC	0.047MF		50V
C11	1-123-333-00	ELECT	100MF	20%	16V
C12	1-123-356-00	ELECT	10MF	20%	16V
C13	1-123-356-00	ELECT	10MF	20%	16V
C14	1-123-661-00	ELECT	100MF	20%	6.3V
C15	1-123-661-00	ELECT	100MF	20%	6.3V
C16	1-123-356-00	ELECT	10MF	20%	16V
C17	1-101-006-00	CERAMIC	0.047MF		50V
C19	1-102-824-00	CERAMIC	470PF	5%	50V
C20	1-101-361-00	CERAMIC	150PF	5%	50V
C21	1-136-153-00	FILM	0.01MF	5%	50V
C201	1-106-359-00	MYLAR	0.0047MF	10%	200V
C202	1-106-359-00	MYLAR	0.0047MF	10%	200V
C203	1-106-359-00	MYLAR	0.0047MF	10%	200V
C204	1-106-383-00	MYLAR	0.047MF	10%	200V
C205	1-123-337-00	ELECT	1000MF	20%	25V
C206	1-123-337-00	ELECT	1000MF	20%	25V
C301	1-130-471-00	MYLAR	0.001MF	5%	50V
C302	1-130-471-00	MYLAR	0.001MF	5%	50V
C303	1-130-471-00	MYLAR	0.001MF	5%	50V
C304	1-130-477-00	MYLAR	0.0033MF	5%	50V
C305	1-130-477-00	MYLAR	0.0033MF	5%	50V
C306	1-130-477-00	MYLAR	0.0033MF	5%	50V
C401	1-123-380-00	ELECT	1MF	20%	50V
C402	1-123-324-00	ELECT	1000MF	20%	16V
C403	1-123-380-00	ELECT	1MF	20%	50V
C404	1-101-004-00	CERAMIC	0.01MF		50V
C405	1-101-004-00	CERAMIC	0.01MF		50V
C406	1-101-004-00	CERAMIC	0.01MF		50V
C407	1-101-004-00	CERAMIC	0.01MF		50V
C408	1-101-004-00	CERAMIC	0.01MF		50V
C409	1-101-004-00	CERAMIC	0.01MF		50V
C410	1-101-004-00	CERAMIC	0.01MF		50V
C411	1-101-004-00	CERAMIC	0.01MF		50V
C412	1-101-004-00	CERAMIC	0.01MF		50V
C413	1-101-004-00	CERAMIC	0.01MF		50V
C414	1-101-004-00	CERAMIC	0.01MF		50V
C415	1-124-245-00	ELECT	4.7MF	20%	25V

DIODE

Ref.No.	Part No.	Description
D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D4	8-719-911-19	DIODE 1SS119
D5	8-719-109-97	DIODE RD6.8ES-B2
D6	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D201	8-719-911-19	DIODE 1SS119
D202	8-719-911-19	DIODE 1SS119
D203	8-719-911-19	DIODE 1SS119
D204	8-719-911-19	DIODE 1SS119
D205	8-719-911-19	DIODE 1SS119
D206	8-719-911-19	DIODE 1SS119
D401	8-719-110-41	DIODE RD15ES-T1B2
D402	8-719-911-19	DIODE 1SS119
D403	8-719-911-19	DIODE 1SS119
D404	8-719-110-36	DIODE RD13ES-B2
D405	8-719-110-36	DIODE RD13ES-B2
D406	8-719-110-36	DIODE RD13ES-B2
D407	8-719-110-36	DIODE RD13ES-B2
D408	8-719-110-36	DIODE RD13ES-B2
D409	8-719-110-36	DIODE RD13ES-B2
D410	8-719-110-36	DIODE RD13ES-B2
D411	8-719-110-36	DIODE RD13ES-B2
D412	8-719-110-36	DIODE RD13ES-B2
D413	8-719-911-19	DIODE 1SS119
D414	8-719-911-19	DIODE 1SS119

CONNECTOR

Ref.No.	Part No.	Description
DB1	*1-566-060-11	PIN, CONNECTOR 8P
DB2	*1-566-060-11	PIN, CONNECTOR 8P
DB3	*1-566-058-11	PIN, CONNECTOR 6P
DB4	*1-566-056-11	PIN, CONNECTOR 4P
DB5	*1-566-060-11	PIN, CONNECTOR 8P
DB6	*1-566-055-11	PIN, CONNECTOR 3P
DB7	*1-566-055-11	PIN, CONNECTOR 3P
DB8	*1-566-055-11	PIN, CONNECTOR 3P
DB9	*1-566-055-11	PIN, CONNECTOR 3P
DB10	*1-566-055-11	PIN, CONNECTOR 3P
DB11	*1-566-055-11	PIN, CONNECTOR 3P
DB12	*1-566-055-11	PIN, CONNECTOR 3P
DB13	*1-566-055-11	PIN, CONNECTOR 3P
DB14	*1-566-055-11	PIN, CONNECTOR 3P
DB15	*1-566-055-11	PIN, CONNECTOR 3P

DB

Ref.No.	Part No.	Description	Remark
DB16	*1-566-055-11	PIN, CONNECTOR 3P	
DB17	*1-566-055-11	PIN, CONNECTOR 3P	
DB18	*1-566-055-11	PIN, CONNECTOR 3P	
DB19	*1-566-055-11	PIN, CONNECTOR 3P	
DB20	*1-566-055-11	PIN, CONNECTOR 3P	
DB21	*1-566-055-11	PIN, CONNECTOR 3P	
DB22	*1-566-055-11	PIN, CONNECTOR 3P	
DB23	*1-566-055-11	PIN, CONNECTOR 3P	
DB24	*1-566-055-11	PIN, CONNECTOR 3P	
DB25	*1-566-058-11	PIN, CONNECTOR 6P	
DB26	*1-566-059-11	PIN, CONNECTOR 7P	
DB27	*1-566-055-11	PIN, CONNECTOR 3P	
DB28	*1-566-060-11	PIN, CONNECTOR 8P	
DB29	*1-566-059-11	PIN, CONNECTOR 7P	
DB30	*1-566-058-11	PIN, CONNECTOR 6P	
DB31	*1-566-054-11	PIN, CONNECTOR 2P	

FUSE

Ref.No.	Part No.	Description	Remark
F301	⚠1-532-078-11	FUSE, TIME-LAG 1A/250V	
F302	⚠1-532-078-11	FUSE, TIME-LAG 1A/250V	
F303	⚠1-532-078-11	FUSE, TIME-LAG 1A/250V	
F304	⚠1-532-078-11	FUSE, TIME-LAG 1A/250V	
F305	⚠1-532-078-11	FUSE, TIME-LAG 1A/250V	
F306	⚠1-532-078-11	FUSE, TIME-LAG 1A/250V	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-170-08	IC UPC78M08H	
IC2	8-759-700-22	IC NJM79M08A	
IC3	8-759-109-82	IC UPC814C	
IC4	8-759-111-69	IC UPC1037HA	
IC5	8-759-109-82	IC UPC814C	
IC6	8-759-109-82	IC UPC814C	
IC7	8-759-111-69	IC UPC1037HA	
IC101	8-741-135-80	IC BX1358	
IC102	8-759-340-52	IC HD14052BP	
IC401	8-759-178-12	IC UPC78L12	
IC402	8-759-103-93	IC UPC393C	
IC403	8-759-340-53	IC HD14053BP	
IC404	8-759-340-53	IC HD14053BP	
IC405	8-759-340-53	IC HD14053BP	

TERMINAL

Ref.No.	Part No.	Description	Remark
PL1	*1-535-615-11	TERMINAL (LAMP SOCKET)	
PL2	*1-535-615-11	TERMINAL (LAMP SOCKET)	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	⚠8-729-178-54	TRANSISTOR 2SC2785-F	
Q2	8-729-178-54	TRANSISTOR 2SC2785	
Q3	8-729-115-10	TRANSISTOR 2SK105A-10	
Q201	⚠8-729-306-92	TRANSISTOR 2SD669A-C	
Q202	⚠8-729-313-82	TRANSISTOR 2SD1138-C	
	4-342-013-00	SPACER, MICA; Q202	
Q203	8-729-386-12	TRANSISTOR 2SB861	
	4-342-013-00	SPACER, MICA; Q203	
Q204	8-729-306-92	TRANSISTOR 2SD669A	
Q205	8-729-313-82	TRANSISTOR 2SD1138	
	4-342-013-00	SPACER, MICA; Q205	
Q206	8-729-386-12	TRANSISTOR 2SB861	
	4-342-013-00	SPACER, MICA; Q206	
Q207	8-729-306-92	TRANSISTOR 2SD669A	
Q208	8-729-313-82	TRANSISTOR 2SD1138	
	4-342-013-00	SPACER, MICA; Q208	
Q209	8-729-386-12	TRANSISTOR 2SB861	
	4-342-013-00	SPACER, MICA; Q209	
Q301	8-729-382-63	TRANSISTOR 2SC1826-Y	
	3-701-754-00	PLATE, INSULATING; Q301	
Q302	8-729-315-63	TRANSISTOR 2SB856	
	3-701-754-00	PLATE, INSULATING; Q302	
Q303	8-729-382-63	TRANSISTOR 2SC1826-Y	
	3-701-754-00	PLATE, INSULATING; Q303	
Q304	8-729-315-63	TRANSISTOR 2SB856	
	3-701-754-00	PLATE, INSULATING; Q304	
Q305	8-729-382-63	TRANSISTOR 2SC1826-Y	
	3-701-754-00	PLATE, INSULATING; Q305	
Q306	8-729-315-63	TRANSISTOR 2SB856	
	3-701-754-00	PLATE, INSULATING; Q306	
Q307	8-729-382-63	TRANSISTOR 2SC1826-Y	
Q308	8-729-315-63	TRANSISTOR 2SB856	
Q309	8-729-382-63	TRANSISTOR 2SC1826-Y	
Q310	8-729-315-63	TRANSISTOR 2SB856	
Q311	8-729-382-63	TRANSISTOR 2SC1826-Y	
Q312	8-729-315-63	TRANSISTOR 2SB856	
Q401	8-729-178-54	TRANSISTOR 2SC2785	
Q402	8-729-173-36	TRANSISTOR 2SA733-Q	
Q403	8-729-117-54	TRANSISTOR 2SA1175	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-215-445-00	METAL	10K	1%	1/6W	
R2	1-215-445-00	METAL	10K	1%	1/6W	
R3	1-249-421-11	CARBON	2.2K	5%	1/4W	
R4	1-215-445-00	METAL	10K	1%	1/6W	
R5	1-215-445-00	METAL	10K	1%	1/6W	
R6	1-249-421-11	CARBON	2.2K	5%	1/4W	
R7	1-249-411-11	CARBON	330	5%	1/4W	
R8	1-249-411-11	CARBON	330	5%	1/4W	
R9	1-249-417-11	CARBON	1K	5%	1/4W	
R10	1-215-451-00	METAL	18K	1%	1/6W	
R11	1-215-413-00	METAL	470	1%	1/6W	
R12	1-215-435-00	METAL	3.9K	1%	1/6W	
R13	1-215-413-00	METAL	470	1%	1/6W	
R14	1-215-447-00	METAL	12K	1%	1/6W	
R15	1-215-415-00	METAL	560	1%	1/6W	
R16	1-215-415-00	METAL	560	1%	1/6W	
R17	1-247-887-00	CARBON	220K	5%	1/4W	
R18	1-249-429-11	CARBON	10K	5%	1/4W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

DB

Ref.No.	Part No.	Description				Remark
R20	1-249-424-11	CARBON	3.9K	5%	1/4W	
R21	1-215-445-00	METAL	10K	1%	1/6W	
R22	1-215-437-00	METAL	4.7K	1%	1/6W	
R23	1-215-429-00	METAL	2.2K	1%	1/6W	
R24	1-215-445-00	METAL	10K	1%	1/6W	
R25	1-215-397-00	METAL	100	1%	1/6W	
R26	1-215-445-00	METAL	10K	1%	1/6W	
R27	1-215-421-00	METAL	1K	1%	1/6W	
R28	1-249-429-11	CARBON	10K	5%	1/4W	
R29	1-247-887-00	CARBON	220K	5%	1/4W	
R30	1-215-413-00	METAL	470	1%	1/6W	
R31	1-215-451-00	METAL	18K	1%	1/6W	
R32	1-215-417-00	METAL	680	1%	1/6W	
R33	1-215-429-00	METAL	2.2K	1%	1/6W	
R37	1-215-467-00	METAL	82K	1%	1/6W	
R38	1-249-429-11	CARBON	10K	5%	1/4W	
R39	1-249-417-11	CARBON	1K	5%	1/4W	
R40	1-215-493-00	CARBON	1M	5%	1/4W	
R41	1-247-887-00	CARBON	220K	5%	1/4W	
R42	1-249-429-11	CARBON	10K	5%	1/4W	
R44	1-249-441-11	CARBON	100K	5%	1/4W	
R101	1-215-483-00	METAL	390K	1%	1/6W	
R102	1-215-449-00	METAL	15K	1%	1/6W	
R103	1-215-469-00	METAL	100K	1%	1/6W	
R104	1-215-471-00	METAL	120K	1%	1/6W	
R105	1-215-441-00	METAL	6.8K	1%	1/6W	
R106	1-215-437-00	METAL	4.7K	1%	1/6W	
R107	1-215-445-00	METAL	10K	1%	1/6W	
R108	1-215-435-00	METAL	3.9K	1%	1/6W	
R109	1-215-443-00	METAL	8.2K	1%	1/6W	
R110	1-215-445-00	METAL	10K	1%	1/6W	
R111	1-215-491-00	METAL	820K	1%	1/6W	
R112	1-215-483-00	METAL	390K	1%	1/6W	
R113	1-215-449-00	METAL	15K	1%	1/6W	
R114	1-215-469-00	METAL	100K	1%	1/6W	
R115	1-215-471-00	METAL	120K	1%	1/6W	
R116	1-215-443-00	METAL	8.2K	1%	1/6W	
R117	1-215-437-00	METAL	4.7K	1%	1/6W	
R118	1-215-439-00	METAL	5.6K	1%	1/6W	
R119	1-215-439-00	METAL	5.6K	1%	1/6W	
R120	1-215-439-00	METAL	5.6K	1%	1/6W	
R121	1-215-439-00	METAL	5.6K	1%	1/6W	
R122	1-215-461-00	METAL	47K	1%	1/6W	
R123	1-215-445-00	METAL	10K	1%	1/6W	
R124	1-215-453-00	METAL	22K	1%	1/6W	
R125	1-215-437-00	METAL	4.7K	1%	1/6W	
R126	1-215-443-00	METAL	8.2K	1%	1/6W	
R127	1-215-445-00	METAL	10K	1%	1/6W	
R128	1-215-447-00	METAL	12K	1%	1/6W	
R129	1-215-447-00	METAL	12K	1%	1/6W	
R130	1-215-447-00	METAL	12K	1%	1/6W	
R131	1-215-447-00	METAL	12K	1%	1/6W	
R132	1-215-491-00	METAL	820K	1%	1/6W	

Ref.No.	Part No.	Description				Remark
R133	1-215-483-00	METAL	390K	1%	1/6W	
R134	1-215-449-00	METAL	15K	1%	1/6W	
R135	1-215-469-00	METAL	100K	1%	1/6W	
R136	1-215-471-00	METAL	120K	1%	1/6W	
R137	1-215-443-00	METAL	8.2K	1%	1/6W	
R138	1-215-437-00	METAL	4.7K	1%	1/6W	
R139	1-215-439-00	METAL	5.6K	1%	1/6W	
R140	1-215-439-00	METAL	5.6K	1%	1/6W	
R141	1-215-439-00	METAL	5.6K	1%	1/6W	
R142	1-215-439-00	METAL	5.6K	1%	1/6W	
R143	1-215-461-00	METAL	47K	1%	1/6W	
R145	1-215-445-00	METAL	10K	1%	1/6W	
R146	1-215-453-00	METAL	22K	1%	1/6W	
R147	1-215-437-00	METAL	4.7K	1%	1/6W	
R148	1-215-443-00	METAL	8.2K	1%	1/6W	
R149	1-215-445-00	METAL	10K	1%	1/6W	
R150	1-215-447-00	METAL	12K	1%	1/6W	
R151	1-215-447-00	METAL	12K	1%	1/6W	
R152	1-215-447-00	METAL	12K	1%	1/6W	
R153	1-215-447-00	METAL	12K	1%	1/6W	
R154	1-215-445-00	METAL	10K	1%	1/6W	
R155	1-215-445-00	METAL	10K	1%	1/6W	
R156	1-215-441-00	METAL	6.8K	1%	1/6W	
R157	1-215-441-00	METAL	6.8K	1%	1/6W	
R158	1-215-441-00	METAL	6.8K	1%	1/6W	
R159	1-247-700-11	CARBON	100	5%	1/4W	F
R160	1-247-700-11	CARBON	100	5%	1/4W	F
R161	1-249-389-11	CARBON	4.7	5%	1/4W	F
R162	1-249-389-11	CARBON	4.7	5%	1/4W	F
R194	1-215-445-00	METAL	10K	1%	1/6W	
R201	1-249-429-11	CARBON	10K	5%	1/4W	
R202	1-249-415-11	CARBON	680	5%	1/4W	
R203	1-249-393-11	CARBON	10	5%	1/4W	
R204	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R205	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R206	1-249-441-11	CARBON	100K	5%	1/4W	
R207	1-249-429-11	CARBON	10K	5%	1/4W	
R208	1-249-415-11	CARBON	680	5%	1/4W	
R209	1-249-393-11	CARBON	10	5%	1/4W	
R210	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R211	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R212	1-249-441-11	CARBON	100K	5%	1/4W	
R213	1-249-429-11	CARBON	10K	5%	1/4W	
R214	1-249-415-11	CARBON	680	5%	1/4W	
R215	1-249-393-11	CARBON	10	5%	1/4W	
R216	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R217	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R218	1-249-441-11	CARBON	100K	5%	1/4W	
R219	1-247-700-11	CARBON	100	5%	1/4W	F
R301	1-249-411-11	CARBON	330	5%	1/4W	

DB

Ref.No.	Part No.	Description				Remark
R302	1-215-373-31	METAL	10	1%	1/6W	
R303	1-215-373-31	METAL	10	1%	1/6W	
R304	1-215-373-31	METAL	10	1%	1/6W	
R305	1-215-864-00	METAL OXIDE	150	5%	1W	F
R306	1-249-411-11	CARBON	330	5%	1/4W	
R307	1-215-373-31	METAL	10	1%	1/6W	
R308	1-215-373-31	METAL	10	1%	1/6W	
R309	1-215-373-31	METAL	10	1%	1/6W	
R310	1-215-864-00	METAL OXIDE	150	5%	1W	F
R311	1-249-411-11	CARBON	330	5%	1/4W	
R312	1-215-373-31	METAL	10	1%	1/6W	
R313	1-215-373-31	METAL	10	1%	1/6W	
R314	1-215-373-31	METAL	10	1%	1/6W	
R315	1-215-864-00	METAL OXIDE	150	5%	1W	F
R316	⚠1-249-389-51	CARBON	4.7	5%	1/4W	F
R317	⚠1-249-389-51	CARBON	4.7	5%	1/4W	F
R318	1-249-411-11	CARBON	330	5%	1/4W	
R319	1-215-864-00	METAL OXIDE	150	5%	1W	F
R320	1-249-411-11	CARBON	330	5%	1/4W	
R321	1-215-864-00	METAL OXIDE	150	5%	1W	F
R322	1-249-411-11	CARBON	330	5%	1/4W	
R323	1-215-864-00	METAL OXIDE	150	5%	1W	F
R401	1-247-849-00	CARBON	5.6K	5%	1/4W	
R402	1-249-438-11	CARBON	56K	5%	1/4W	
R403	1-249-430-11	CARBON	12K	5%	1/4W	
R404	1-249-433-11	CARBON	22K	5%	1/4W	
R405	1-249-441-11	CARBON	100K	5%	1/4W	
R406	1-249-409-11	CARBON	220	5%	1/4W	
R407	1-249-441-11	CARBON	100K	5%	1/4W	
R408	1-249-429-11	CARBON	10K	5%	1/4W	
R409	1-249-433-11	CARBON	22K	5%	1/4W	
R410	1-249-437-11	CARBON	47K	5%	1/4W	
R411	1-249-417-11	CARBON	1K	5%	1/4W	
R412	1-249-437-11	CARBON	47K	5%	1/4W	
R413	1-215-454-00	METAL	24K	1%	1/6W	
R414	1-215-454-00	METAL	24K	1%	1/6W	
R415	1-215-475-00	METAL	180K	1%	1/6W	
R416	1-215-455-00	METAL	27K	1%	1/6W	
R417	1-215-453-00	METAL	22K	1%	1/6W	
R418	1-215-453-00	METAL	22K	1%	1/6W	
R419	1-215-455-00	METAL	27K	1%	1/6W	
R420	1-215-470-00	METAL	110K	1%	1/6W	
R421	1-249-417-11	CARBON	1K	5%	1/4W	
R422	1-249-417-11	CARBON	1K	5%	1/4W	
R423	1-249-417-11	CARBON	1K	5%	1/4W	
R424	1-249-417-11	CARBON	1K	5%	1/4W	
R425	1-249-417-11	CARBON	1K	5%	1/4W	
R426	1-249-417-11	CARBON	1K	5%	1/4W	
R427	1-249-417-11	CARBON	1K	5%	1/4W	
R428	1-249-417-11	CARBON	1K	5%	1/4W	
R429	1-249-417-11	CARBON	1K	5%	1/4W	
R430	1-249-417-11	CARBON	1K	5%	1/4W	
R431	1-249-417-11	CARBON	1K	5%	1/4W	
R432	1-249-417-11	CARBON	1K	5%	1/4W	
R433	1-249-417-11	CARBON	1K	5%	1/4W	
R434	1-249-417-11	CARBON	1K	5%	1/4W	
R435	1-249-417-11	CARBON	1K	5%	1/4W	
R436	1-249-405-11	CARBON	100	5%	1/4W	
R437	1-249-405-11	CARBON	100	5%	1/4W	
R438	1-249-405-11	CARBON	100	5%	1/4W	
R439	1-249-417-11	CARBON	1K	5%	1/4W	
R440	1-249-417-11	CARBON	1K	5%	1/4W	
R441	1-249-417-11	CARBON	1K	5%	1/4W	
R442	1-249-417-11	CARBON	1K	5%	1/4W	
R443	1-249-417-11	CARBON	1K	5%	1/4W	
R444	1-249-417-11	CARBON	1K	5%	1/4W	
R445	1-249-417-11	CARBON	1K	5%	1/4W	
R446	1-249-417-11	CARBON	1K	5%	1/4W	
R447	1-249-417-11	CARBON	1K	5%	1/4W	
R448	1-249-435-11	CARBON	33K	5%	1/4W	
R449	1-215-464-00	CARBON	62K	5%	1/4W	
R450	1-249-436-11	CARBON	39K	5%	1/4W	
R451	1-247-883-00	CARBON	150K	5%	1/4W	
R452	1-249-439-11	CARBON	68K	5%	1/4W	
R453	1-215-468-00	METAL	91K	1%	1/6W	
R454	1-215-473-00	METAL	150K	1%	1/6W	
R455	1-249-429-11	CARBON	10K	5%	1/4W	
R457	1-249-401-11	CARBON	47	5%	1/4W	F

VARIABLE RESISTOR

Ref.No.	Part No.	Description
RV1	1-224-254-XX	RES, ADJ, METAL GLAZE 47K
RV2	1-224-253-XX	RES, ADJ, METAL GLAZE 22K
RV3	1-224-254-XX	RES, ADJ, METAL GLAZE 47K
RV101	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV102	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV103	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV104	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV105	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV106	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV107	1-224-250-XX	RES, ADJ, METAL GLAZE 2.2K
RV108	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV109	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV110	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV112	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV113	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV114	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV115	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV116	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV117	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV118	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV119	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV120	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV121	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV122	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV123	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K
RV124	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
RV125	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV126	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV127	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV128	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV129	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV130	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV131	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV132	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV133	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV134	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV135	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV136	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV137	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV138	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV139	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV140	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV141	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV142	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV143	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV144	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV145	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV146	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV147	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV401	1-228-938-00	RES, VAR, CARBON 20K	
RV402	1-228-937-00	RES, VAR, CARBON 20K	
RV403	1-228-937-00	RES, VAR, CARBON 20K	
RV404	1-228-937-00	RES, VAR, CARBON 20K	
RV405	1-228-938-00	RES, VAR, CARBON 20K	
RV406	1-228-938-00	RES, VAR, CARBON 20K	

SWITCH

Ref.No.	Part No.	Description	Remark
S1	1-553-716-00	SWITCH, SLIDE	
S2	1-553-755-00	SWITCH, SLIDE	
S3	1-552-437-00	SWITCH, LEVER	
S401	1-554-500-00	SWITCH, PUSH (3 KEY)	
S402	1-553-716-00	SWITCH, SLIDE	
S403	1-553-716-00	SWITCH, SLIDE	
S404	1-553-716-00	SWITCH, SLIDE	
S405	1-553-716-00	SWITCH, SLIDE	
S406	1-553-716-00	SWITCH, SLIDE	
S408	1-552-737-00	SWITCH, PUSH	

****

*1-617-550-11 DC BOARD
****

CAPACITOR

Ref.No.	Part No.	Description	Remark
C1	1-136-153-00	FILM 0.01MF 5% 50V	
C2	1-124-598-11	ELECT 22MF 20% 25V	
C3	1-162-318-11	CERAMIC 0.001MF 10% 500V	

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-911-19	DIODE 1SS119	

CONNECTOR

Ref.No.	Part No.	Description	Remark
DC1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-145-58	IC UPC4558C	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-178-54	TRANSISTOR 2SC2785	
Q2	8-729-117-54	TRANSISTOR 2SA1175	

RESISTOR

Ref.No.	Part No.	Description	Remark
R1	1-215-441-00	METAL 6.8K 1% 1/6W	
R2	1-215-445-00	METAL 10K 1% 1/6W	
R3	1-215-373-31	METAL 10 1% 1/6W	
R4	1-215-373-31	METAL 10 1% 1/6W	
R5	1-215-373-31	METAL 10 1% 1/6W	
R6	1-215-373-31	METAL 10 1% 1/6W	
R7	1-215-373-31	METAL 10 1% 1/6W	
R8	1-249-429-11	CARBON 10K 5% 1/4W	
R9	1-249-417-11	CARBON 1K 5% 1/4W	
R10	1-249-441-11	CARBON 100K 5% 1/4W	
R11	1-249-429-11	CARBON 10K 5% 1/4W	

****

*1-617-551-11 DD BOARD
****

CAPACITOR

Ref.No.	Part No.	Description	Remark
C2	1-124-258-00	ELECT 3.3MF 20% 50V	
C3	1-101-004-00	CERAMIC 0.01MF 50V	
C4	1-124-258-00	ELECT 3.3MF 20% 50V	
C5	1-101-004-00	CERAMIC 0.01MF 50V	

CONNECTOR

Ref.No.	Part No.	Description	Remark
DD1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-903-16	IC LM318P	

RESISTOR

Ref.No.	Part No.	Description	Remark
R1	1-215-421-00	METAL 1K 1% 1/6W	
R2	1-215-421-00	METAL 1K 1% 1/6W	
R3	1-215-373-31	METAL 10 1% 1/6W	
R4	1-215-373-31	METAL 10 1% 1/6W	
R5	1-215-373-31	METAL 10 1% 1/6W	

FB FA FC

Ref.No.	Part No.	Description				Remark
	*1-617-556-21	FB BOARD ********				
		CAPACITOR				
C1	1-123-332-00	ELECT	47MF	20%	25V	
		DIODE				
D1	8-719-911-19	DIODE 1SS119				
D2	8-719-900-95	DIODE V09G				
		CONNECTOR				
FB1	*1-508-786-00	2P PLUG (M)				
FB2	*1-508-784-00	1P PLUG				
FB3	*1-508-784-00	1P PLUG				
FB4	*1-566-054-11	PIN, CONNECTOR 2P				
		TRANSISTOR				
Q1	8-729-178-54	TRANSISTOR 2SC2785				
Q2	8-729-178-54	TRANSISTOR 2SC2785				
		RESISTOR				
R1	1-249-437-11	CARBON	47K	5%	1/4W	
R2	1-249-437-11	CARBON	47K	5%	1/4W	
R3	1-249-421-11	CARBON	2.2K	5%	1/4W	
R4	1-249-413-11	CARBON	470	5%	1/4W	
R5	1-249-405-11	CARBON	100	5%	1/4W	
R6	1-247-736-11	CARBON	56	5%	1/2W	
		RELAY				
RY1	⚠1-515-489-11	RELAY				

****

Ref.No.	Part No.	Description				Remark
	*1-620-495-11	FA BOARD ********				
		CAPACITOR				
C1	1-136-360-00	FILM	0.22MF	20%	250V	
C2	⚠1-136-360-11	FILM	0.22MF	20%	250V	
C3	⚠1-161-743-51	CERAMIC	0.0047MF		400V	
C4	⚠1-161-743-51	CERAMIC	0.0047MF		400V	
C5	⚠1-125-457-11	ELECT(BLOCK)	560MF	20%	200V	
C6	⚠1-125-457-11	ELECT(BLOCK)	560MF	20%	200V	
C7	1-101-003-00	CERAMIC	0.0047MF		50V	
C8	1-101-003-00	CERAMIC	0.0047MF		50V	
C9	1-123-362-00	ELECT	330MF	20%	50V	
		DIODE				
D1	⚠8-719-911-54	DIODE U05E				
D2	⚠8-719-911-54	DIODE U05E				
D3	⚠8-719-911-54	DIODE U05E				
D4	⚠8-719-911-54	DIODE U05E				
D5	⚠8-719-511-20	DIODE S1VB20				
D6	8-719-900-95	DIODE V09G				
		FUSE				
F1	⚠1-532-299-11	FUSE, TIME-LAG 5A/250V				
	*1-533-146-00	HOLDER, FUSE; F1				
F2	⚠1-532-613-11	FUSE, TIME-LAG 0.2A/250V				
	*1-533-146-00	HOLDER, FUSE; F2				
		CONNECTOR				
FA1	*1-508-765-00	3P PLUG (M)				
FA3	*1-508-784-00	1P PLUG				
FA4	*1-508-784-00	1P PLUG				
FA5	*1-508-784-00	1P PLUG				
FA6	*1-508-765-00	3P PLUG (M)				
FA7	*1-566-056-11	PIN, CONNECTOR 4P				
FA8	*1-508-766-00	4P PLUG (M)				
		COIL				
L1	1-421-860-11	COIL, NOISE FILTER				
L2	1-421-860-11	COIL, NOISE FILTER				
		RESISTOR				
R1	⚠1-202-655-91	SOLID	2.7M	5%	1/2W	
R3	⚠1-244-929-91	CARBON	220K	5%	1/2W	
R4	⚠1-244-929-91	CARBON	220K	5%	1/2W	
		RELAY				
RY1	⚠1-515-579-11	RELAY				
		TRANSFORMER				
T1	⚠1-421-662-11	LFT				
T2	⚠1-448-374-11	TRANSFORMER, POWER				

****

Ref.No.	Part No.	Description				Remark
	*1-620-496-11	FC BOARD ********				
		CAPACITOR				
C1	⚠1-136-135-11	FILM	2.2MF	5%	400V	
C2	1-161-742-00	CERAMIC	0.0022MF	20%	400V	
C3	1-161-742-00	CERAMIC	0.0022MF	20%	400V	
C4	1-161-742-00	CERAMIC	0.0022MF	20%	400V	
C5	1-161-742-00	CERAMIC	0.0022MF	20%	400V	
		CONNECTOR				
FC1	*1-508-765-00	3P PLUG (M)				
FC2	*1-508-765-00	3P PLUG (M)				
FC3	*1-508-786-00	2P PLUG (M)				
		TRANSFORMER				
T1	⚠1-421-776-11	LFT				
T2	1-421-776-11	LFT				

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
	*1-618-724-11	QB BOARD ********				
	1-536-991-11	TERMINAL BOARD, INPUT/OUTPUT				

CAPACITOR

C201	1-123-820-00	ELECT	33MF	20%	16V
C202	1-123-820-00	ELECT	33MF	20%	16V
C203	1-123-820-00	ELECT	33MF	20%	16V
C204	1-123-323-00	ELECT	470MF	20%	16V
C205	1-123-323-00	ELECT	470MF	20%	16V
C206	1-101-004-00	CERAMIC	0.01MF		50V
C207	1-124-236-00	ELECT	47MF	20%	16V
C208	1-102-824-00	CERAMIC	470PF	5%	50V
C209	1-102-824-00	CERAMIC	470PF	5%	50V
C210	1-124-462-00	ELECT	10MF	20%	16V
C211	1-102-824-00	CERAMIC	470PF	5%	50V
C212	1-102-824-00	CERAMIC	470PF	5%	50V
C213	1-124-462-00	ELECT	10MF	20%	16V
C214	1-124-462-00	ELECT	10MF	20%	16V

COIL

L1	1-410-396-41	FERRITE BEAD INDUCTOR
L2	1-410-396-41	FERRITE BEAD INDUCTOR
L3	1-410-396-41	FERRITE BEAD INDUCTOR
L4	1-410-396-41	FERRITE BEAD INDUCTOR

TRANSISTOR

Q201	8-729-384-46	TRANSISTOR 2SA844-C
Q202	8-729-900-89	TRANSISTOR DTC144ES
Q203	8-729-603-50	TRANSISTOR 2SC403SP
Q204	8-729-603-50	TRANSISTOR 2SC403SP
Q205	8-729-900-89	TRANSISTOR DTC144ES
Q206	8-729-384-46	TRANSISTOR 2SA844-C
Q207	8-729-900-89	TRANSISTOR DTC144ES
Q208	8-729-603-50	TRANSISTOR 2SC403SP
Q209	8-729-603-50	TRANSISTOR 2SC403SP
Q210	8-729-178-54	TRANSISTOR 2SC2785
Q211	8-729-178-54	TRANSISTOR 2SC2785

CONNECTOR

QB1	*1-566-058-11	PIN, CONNECTOR 6P
QB2	*1-566-055-11	PIN, CONNECTOR 3P
QB3	*1-566-056-11	PIN, CONNECTOR 4P

RESISTOR

R201	1-214-702-00	METAL	75	1%	1/4W
R202	1-249-439-11	CARBON	68K	5%	1/4W
R203	1-249-434-11	CARBON	27K	5%	1/4W
R204	1-249-417-11	CARBON	1K	5%	1/4W
R205	1-249-427-11	CARBON	6.8K	5%	1/4W
R206	1-249-417-11	CARBON	1K	5%	1/4W
R207	1-249-405-11	CARBON	100	5%	1/4W
R208	1-249-417-11	CARBON	1K	5%	1/4W
R209	1-249-405-11	CARBON	100	5%	1/4W
R210	1-249-427-11	CARBON	6.8K	5%	1/4W
R211	1-249-417-11	CARBON	1K	5%	1/4W
R212	1-249-417-11	CARBON	1K	5%	1/4W
R213	1-249-439-11	CARBON	68K	5%	1/4W
R214	1-249-434-11	CARBON	27K	5%	1/4W
R215	1-214-702-00	METAL	75	1%	1/4W
R216	1-249-429-11	CARBON	10K	5%	1/4W
R217	1-215-414-00	METAL	510	1%	1/6W
R218	1-215-423-00	METAL	1.2K	1%	1/6W
R219	1-249-417-11	CARBON	1K	5%	1/4W
R220	1-249-437-11	CARBON	47K	5%	1/4W
R221	1-249-434-11	CARBON	27K	5%	1/4W
R222	1-249-405-11	CARBON	100	5%	1/4W
R223	1-249-405-11	CARBON	100	5%	1/4W
R224	1-247-708-11	CARBON	470	5%	1/4W
R225	1-214-702-00	METAL	75	1%	1/4W
R226	1-249-429-11	CARBON	10K	5%	1/4W
R227	1-249-429-11	CARBON	10K	5%	1/4W
R228	1-249-439-11	CARBON	68K	5%	1/4W
R229	1-249-434-11	CARBON	27K	5%	1/4W
R230	1-249-429-11	CARBON	10K	5%	1/4W
R231	1-249-439-11	CARBON	68K	5%	1/4W
R232	1-249-434-11	CARBON	27K	5%	1/4W
R233	1-215-445-00	METAL	10K	1%	1/6W
R234	1-215-437-00	METAL	4.7K	1%	1/6W
R235	1-247-895-00	CARBON	470K	5%	1/4W
R236	1-247-895-00	CARBON	470K	5%	1/4W

SWITCH

S201	1-553-725-00	SWITCH, SLIDE

`*************************************************************`

	*A-1275-081-A	QA BOARD, COMPLETE *****************

CAPACITOR

C1	1-123-820-00	ELECT	33MF	20%	16V
C2	1-124-236-00	ELECT	47MF	20%	16V
C3	1-123-820-00	ELECT	33MF	20%	16V
C4	1-123-820-00	ELECT	33MF	20%	16V
C5	1-101-004-00	CERAMIC	0.01MF		50V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-101-004-00	CERAMIC	0.01MF		50V
C9	1-102-820-00	CERAMIC	330PF	5%	50V
C10	1-102-973-00	CERAMIC	100PF	5%	50V
C11	1-101-004-00	CERAMIC	0.01MF		50V
C12	1-101-004-00	CERAMIC	0.01MF		50V
C13	1-130-475-00	MYLAR	0.0022MF	5%	50V
C14	1-124-464-11	ELECT	0.22MF	20%	50V
C15	1-101-004-00	CERAMIC	0.01MF		50V
C16	1-101-004-00	CERAMIC	0.01MF		50V
C17	1-101-004-00	CERAMIC	0.01MF		50V
C18	1-101-004-00	CERAMIC	0.01MF		50V
C19	1-101-004-00	CERAMIC	0.01MF		50V

QA

Ref.No.	Part No.	Description			Remark
C20	1-124-236-00	ELECT	47MF	20%	16V
C21	1-130-481-00	MYLAR	0.0068MF	5%	50V
C101	1-124-462-00	ELECT	10MF	20%	16V
C102	1-124-462-00	ELECT	10MF	20%	16V
C103	1-102-824-00	CERAMIC	470PF	5%	50V
C104	1-102-824-00	CERAMIC	470PF	5%	50V
C105	1-102-824-00	CERAMIC	470PF	5%	50V
C106	1-102-824-00	CERAMIC	470PF	5%	50V
C107	1-124-462-00	ELECT	10MF	20%	16V
C108	1-124-462-00	ELECT	10MF	20%	16V
C109	1-124-462-00	ELECT	10MF	20%	16V
C120	1-123-323-00	ELECT	470MF	20%	16V
C121	1-123-323-00	ELECT	470MF	20%	16V
C122	1-123-820-00	ELECT	33MF	20%	16V
C123	1-123-820-00	ELECT	33MF	20%	16V
C124	1-124-462-00	ELECT	10MF	20%	16V
C125	1-101-004-00	CERAMIC	0.01MF		50V
C126	1-101-004-00	CERAMIC	0.01MF		50V
C127	1-101-004-00	CERAMIC	0.01MF		50V
C128	1-101-004-00	CERAMIC	0.01MF		50V
C129	1-101-004-00	CERAMIC	0.01MF		50V
C130	1-102-824-00	CERAMIC	470PF	5%	50V
C131	1-102-824-00	CERAMIC	470PF	5%	50V
C132	1-124-236-00	ELECT	47MF	20%	16V
C133	1-123-332-00	ELECT	47MF	20%	25V
C134	1-124-284-00	ELECT	10MF	20%	16V
C135	1-123-820-00	ELECT	33MF	20%	16V

CONNECTOR

Ref.No.	Part No.	Description	Remark
CN1	1-561-534-00	SOCKET 21P	
CN2	1-564-959-21	PLUG, CONNECTOR (D-SUB) 9P	
QA1	*1-566-060-11	PIN, CONNECTOR 8P	
QA2	*1-566-055-11	PIN, CONNECTOR 3P	
QA3	*1-566-061-11	PIN, CONNECTOR 9P	
QA4	*1-566-055-11	PIN, CONNECTOR 3P	
QA5	*1-566-059-11	PIN, CONNECTOR 7P	
QA6	*1-566-059-11	PIN, CONNECTOR 7P	
QA7	*1-566-064-11	PIN, CONNECTOR 12P	
QA8	*1-566-055-11	PIN, CONNECTOR 3P	
QA9	*1-566-056-11	PIN, CONNECTOR 4P	
QA10	*1-566-058-11	PIN, CONNECTOR 6P	
QA11	*1-566-055-11	PIN, CONNECTOR 3P	

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D3	8-719-911-19	DIODE 1SS119	
D4	8-719-911-19	DIODE 1SS119	
D5	8-719-911-19	DIODE 1SS119	
D6	8-719-911-19	DIODE 1SS119	
D7	8-719-100-38	DIODE RD6.2E-B2	
D8	8-719-911-19	DIODE 1SS119	
D101	8-719-101-39	DIODE RD3.6E-L2	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-900-09	IC SN74LS09N	
IC2	8-759-902-66	IC SN74LS266N	
IC3	8-759-900-05	IC SN74LS05N	
IC4	8-759-901-36	IC SN74LS136N	
IC5	8-759-103-93	IC UPC393C	
IC6	8-759-900-00	IC SN74LS00N	
IC7	8-759-900-00	IC SN74LS00N	
IC8	8-759-170-05	IC UPC78M05H	
IC101	8-759-340-53	IC HD14053BP	
IC102	8-759-178-12	IC UPC78L12	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-384-46	TRANSISTOR 2SA844-C	
Q2	8-729-110-52	TRANSISTOR 2SA1005-L	
Q3	8-729-105-47	TRANSISTOR 2SC2026-L	
Q4	8-729-110-52	TRANSISTOR 2SA1005-L	
Q5	8-729-105-47	TRANSISTOR 2SC2026-L	
Q6	8-729-110-52	TRANSISTOR 2SA1005-L	
Q7	8-729-105-47	TRANSISTOR 2SC2026-L	
Q8	8-729-105-47	TRANSISTOR 2SC2026-L	
Q9	8-729-105-47	TRANSISTOR 2SC2026-L	
Q10	8-729-105-47	TRANSISTOR 2SC2026-L	
Q11	8-729-178-54	TRANSISTOR 2SC2785	
Q12	8-729-178-54	TRANSISTOR 2SC2785	
Q13	8-729-178-54	TRANSISTOR 2SC2785	
Q14	8-729-900-89	TRANSISTOR DTC144ES	
Q15	8-729-178-54	TRANSISTOR 2SC2785	
Q16	8-729-117-54	TRANSISTOR 2SA1175	
Q17	8-729-900-89	TRANSISTOR DTC144ES	
Q18	8-729-900-89	TRANSISTOR DTC144ES	
Q19	8-729-900-89	TRANSISTOR DTC144ES	
Q20	8-729-900-89	TRANSISTOR DTC144ES	
Q21	8-729-178-54	TRANSISTOR 2SC2785	
Q101	8-729-178-54	TRANSISTOR 2SC2785	
Q102	8-729-178-54	TRANSISTOR 2SC2785	
Q103	8-729-117-54	TRANSISTOR 2SA1175	
Q104	8-729-603-50	TRANSISTOR 2SC403SP	
Q105	8-729-603-50	TRANSISTOR 2SC403SP	
Q106	8-729-900-89	TRANSISTOR DTC144ES	
Q107	8-729-178-54	TRANSISTOR 2SC2785	
Q108	8-729-384-46	TRANSISTOR 2SA844-C	
Q109	8-729-900-89	TRANSISTOR DTC144ES	
Q110	8-729-900-89	TRANSISTOR DTC144ES	
Q111	8-729-603-50	TRANSISTOR 2SC403SP	
Q112	8-729-603-50	TRANSISTOR 2SC403SP	
Q113	8-729-900-89	TRANSISTOR DTC144ES	
Q114	8-729-900-89	TRANSISTOR DTC144ES	
Q115	8-729-384-46	TRANSISTOR 2SA844-C	
Q116	8-729-900-89	TRANSISTOR DTC144ES	
Q117	8-729-178-54	TRANSISTOR 2SC2785	
Q118	8-729-178-54	TRANSISTOR 2SC2785	
Q119	8-729-178-54	TRANSISTOR 2SC2785	

Ref.No.	Part No.	Description				Remark
Q120	8-729-117-54	TRANSISTOR 2SA1175				

RESISTOR

Ref.No.	Part No.	Description				Remark
R2	1-214-702-00	METAL	75	1%	1/4W	
R3	1-249-417-11	CARBON	1K	5%	1/4W	
R4	1-249-421-11	CARBON	2.2K	5%	1/4W	
R5	1-249-402-11	CARBON	56	5%	1/4W	
R6	1-214-702-00	METAL	75	1%	1/4W	
R7	1-247-881-00	CARBON	120K	5%	1/4W	
R8	1-249-434-11	CARBON	27K	5%	1/4W	
R9	1-249-413-11	CARBON	470	5%	1/4W	
R10	1-249-427-11	CARBON	6.8K	5%	1/4W	
R11	1-249-417-11	CARBON	1K	5%	1/4W	
R12	1-249-405-11	CARBON	100	5%	1/4W	
R13	1-249-417-11	CARBON	1K	5%	1/4W	
R14	1-214-702-00	METAL	75	1%	1/4W	
R15	1-247-881-00	CARBON	120K	5%	1/4W	
R16	1-249-434-11	CARBON	27K	5%	1/4W	
R17	1-249-413-11	CARBON	470	5%	1/4W	
R18	1-249-427-11	CARBON	6.8K	5%	1/4W	
R19	1-249-417-11	CARBON	1K	5%	1/4W	
R20	1-249-405-11	CARBON	100	5%	1/4W	
R21	1-249-417-11	CARBON	1K	5%	1/4W	
R22	1-214-702-00	METAL	75	1%	1/4W	
R23	1-247-881-00	CARBON	120K	5%	1/4W	
R24	1-249-434-11	CARBON	27K	5%	1/4W	
R25	1-249-413-11	CARBON	470	5%	1/4W	
R26	1-249-427-11	CARBON	6.8K	5%	1/4W	
R27	1-249-417-11	CARBON	1K	5%	1/4W	
R28	1-249-405-11	CARBON	100	5%	1/4W	
R29	1-249-417-11	CARBON	1K	5%	1/4W	
R30	1-249-402-11	CARBON	56	5%	1/4W	
R31	1-249-402-11	CARBON	56	5%	1/4W	
R32	1-249-402-11	CARBON	56	5%	1/4W	
R33	1-249-417-11	CARBON	1K	5%	1/4W	
R34	1-249-417-11	CARBON	1K	5%	1/4W	
R35	1-249-417-11	CARBON	1K	5%	1/4W	
R36	1-249-417-11	CARBON	1K	5%	1/4W	
R37	1-249-409-11	CARBON	220	5%	1/4W	
R38	1-249-409-11	CARBON	220	5%	1/4W	
R39	1-249-409-11	CARBON	220	5%	1/4W	
R40	1-249-409-11	CARBON	220	5%	1/4W	
R41	1-249-429-11	CARBON	10K	5%	1/4W	
R42	1-249-413-11	CARBON	470	5%	1/4W	
R43	1-249-421-11	CARBON	2.2K	5%	1/4W	
R44	1-249-421-11	CARBON	2.2K	5%	1/4W	
R45	1-249-421-11	CARBON	2.2K	5%	1/4W	
R46	1-249-417-11	CARBON	1K	5%	1/4W	
R47	1-249-417-11	CARBON	1K	5%	1/4W	
R48	1-249-417-11	CARBON	1K	5%	1/4W	
R49	1-249-410-11	CARBON	270	5%	1/4W	
R50	1-249-410-11	CARBON	270	5%	1/4W	
R51	1-249-410-11	CARBON	270	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R52	1-249-420-11	CARBON	1.8K	5%	1/4W	
R53	1-249-429-11	CARBON	10K	5%	1/4W	
R54	1-249-417-11	CARBON	1K	5%	1/4W	
R55	1-249-418-11	CARBON	1.2K	5%	1/4W	
R56	1-249-427-11	CARBON	6.8K	5%	1/4W	
R57	1-249-405-11	CARBON	100	5%	1/4W	
R58	1-249-433-11	CARBON	22K	5%	1/4W	
R59	1-249-437-11	CARBON	47K	5%	1/4W	
R60	1-249-429-11	CARBON	10K	5%	1/4W	
R61	1-249-429-11	CARBON	10K	5%	1/4W	
R62	1-249-429-11	CARBON	10K	5%	1/4W	
R63	1-249-409-11	CARBON	220	5%	1/4W	
R64	1-249-409-11	CARBON	220	5%	1/4W	
R65	1-249-425-11	CARBON	4.7K	5%	1/4W	
R66	1-249-433-11	CARBON	22K	5%	1/4W	
R67	1-249-425-11	CARBON	4.7K	5%	1/4W	
R68	1-249-429-11	CARBON	10K	5%	1/4W	
R69	1-249-433-11	CARBON	22K	5%	1/4W	
R70	1-249-419-11	CARBON	1.5K	5%	1/4W	
R71	1-249-429-11	CARBON	10K	5%	1/4W	
R72	1-249-429-11	CARBON	10K	5%	1/4W	
R73	1-249-429-11	CARBON	10K	5%	1/4W	
R74	1-249-416-11	CARBON	820	5%	1/4W	
R75	1-249-421-11	CARBON	2.2K	5%	1/4W	
R76	1-249-405-11	CARBON	100	5%	1/4W	
R77	1-249-417-11	CARBON	1K	5%	1/4W	
R78	1-249-405-11	CARBON	100	5%	1/4W	
R79	1-249-428-11	CARBON	8.2K	5%	1/4W	
R80	1-249-417-11	CARBON	1K	5%	1/4W	
R81	1-249-405-11	CARBON	100	5%	1/4W	
R82	1-249-397-11	CARBON	22	5%	1/4W	
R83	1-249-429-11	CARBON	10K	5%	1/4W	
R84	1-249-409-11	CARBON	220	5%	1/4W	
R85	1-249-429-11	CARBON	10K	5%	1/4W	
R86	1-249-409-11	CARBON	220	5%	1/4W	
R87	1-249-429-11	CARBON	10K	5%	1/4W	
R88	1-249-429-11	CARBON	10K	5%	1/4W	
R89	1-249-429-11	CARBON	10K	5%	1/4W	
R90	1-249-409-11	CARBON	220	5%	1/4W	
R91	1-249-409-11	CARBON	220	5%	1/4W	
R92	1-249-409-11	CARBON	220	5%	1/4W	
R93	1-215-859-00	METAL OXIDE	22	5%	1W	F
R101	1-249-441-11	CARBON	100K	5%	1/4W	
R102	1-249-441-11	CARBON	100K	5%	1/4W	
R103	1-249-416-11	CARBON	820	5%	1/4W	
R104	1-249-416-11	CARBON	820	5%	1/4W	
R105	1-249-429-11	CARBON	10K	5%	1/4W	
R106	1-249-429-11	CARBON	10K	5%	1/4W	
R107	1-215-444-00	METAL	9.1K	1%	1/6W	
R108	1-215-438-00	METAL	5.1K	1%	1/6W	
R109	1-249-439-11	CARBON	68K	5%	1/4W	
R110	1-249-434-11	CARBON	27K	5%	1/4W	
R111	1-249-439-11	CARBON	68K	5%	1/4W	

QA GB

Ref.No.	Part No.	Description				Remark
R112	1-249-434-11	CARBON	27K	5%	1/4W	
R113	1-249-429-11	CARBON	10K	5%	1/4W	
R114	1-249-429-11	CARBON	10K	5%	1/4W	
R116	1-249-434-11	CARBON	27K	5%	1/4W	
R117	1-249-429-11	CARBON	10K	5%	1/4W	
R118	1-214-702-00	METAL	75	1%	1/4W	
R119	1-247-708-11	CARBON	470	5%	1/4W	
R120	1-249-405-11	CARBON	100	5%	1/4W	
R121	1-249-437-11	CARBON	47K	5%	1/4W	
R122	1-249-434-11	CARBON	27K	5%	1/4W	
R123	1-215-423-00	METAL	1.2K	1%	1/6W	
R124	1-249-417-11	CARBON	1K	5%	1/4W	
R125	1-215-414-00	METAL	510	1%	1/6W	
R126	1-249-434-11	CARBON	27K	5%	1/4W	
R127	1-249-434-11	CARBON	27K	5%	1/4W	
R128	1-249-417-11	CARBON	1K	5%	1/4W	
R129	1-249-434-11	CARBON	27K	5%	1/4W	
R130	1-249-425-11	CARBON	4.7K	5%	1/4W	
R131	1-214-702-00	METAL	75	1%	1/4W	
R132	1-249-439-11	CARBON	68K	5%	1/4W	
R133	1-249-434-11	CARBON	27K	5%	1/4W	
R134	1-249-417-11	CARBON	1K	5%	1/4W	
R135	1-249-427-11	CARBON	6.8K	5%	1/4W	
R136	1-249-417-11	CARBON	1K	5%	1/4W	
R137	1-249-405-11	CARBON	100	5%	1/4W	
R138	1-249-413-11	CARBON	470	5%	1/4W	
R139	1-249-402-11	CARBON	56	5%	1/4W	
R140	1-249-405-11	CARBON	100	5%	1/4W	
R141	1-249-427-11	CARBON	6.8K	5%	1/4W	
R142	1-249-417-11	CARBON	1K	5%	1/4W	
R143	1-249-405-11	CARBON	100	5%	1/4W	
R144	1-249-429-11	CARBON	10K	5%	1/4W	
R145	1-249-405-11	CARBON	100	5%	1/4W	
R146	1-249-422-11	CARBON	2.7K	5%	1/4W	
R147	1-249-405-11	CARBON	100	5%	1/4W	
R148	1-249-405-11	CARBON	100	5%	1/4W	
R149	1-249-405-11	CARBON	100	5%	1/4W	
R150	1-247-849-00	CARBON	5.6K	5%	1/4W	
R151	1-249-430-11	CARBON	12K	5%	1/4W	
R152	1-249-425-11	CARBON	4.7K	5%	1/4W	
R153	1-249-405-11	CARBON	100	5%	1/4W	
R154	1-249-405-11	CARBON	100	5%	1/4W	
R155	1-249-405-11	CARBON	100	5%	1/4W	
R156	1-215-437-00	METAL	4.7K	1%	1/6W	
R157	1-249-429-11	CARBON	10K	5%	1/4W	
R158	1-249-425-11	CARBON	4.7K	5%	1/4W	
R159	1-249-405-11	CARBON	100	5%	1/4W	
R160	1-249-405-11	CARBON	100	5%	1/4W	
R161	1-247-895-00	CARBON	470K	5%	1/4W	
R162	1-247-895-00	CARBON	470K	5%	1/4W	
R163	1-215-445-00	METAL	10K	1%	1/6W	
R164	1-249-417-11	CARBON	1K	5%	1/4W	
R165	1-249-430-11	CARBON	12K	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R166	1-249-429-11	CARBON	10K	5%	1/4W	
R170	1-249-417-11	CARBON	1K	5%	1/4W	
R171	1-249-425-11	CARBON	4.7K	5%	1/4W	
R172	1-249-433-11	CARBON	22K	5%	1/4W	

SWITCH

S1	1-553-725-00	SWITCH, SLIDE

****

*1-623-485-11 GB BOARD
****

*1-533-146-00 HOLDER, FUSE

CAPACITOR

C1	1-124-462-00	ELECT	10MF	20%	16V
C2	1-125-494-11	ELECT(BLOCK)	560MF	20%	160V
C3	1-123-820-00	ELECT	33MF	20%	16V
C4	1-123-321-00	ELECT	220MF	20%	16V
C5	1-101-003-00	CERAMIC	0.0047MF		50V
C6	1-101-003-00	CERAMIC	0.0047MF		50V
C7	1-136-173-00	FILM	0.47MF	5%	50V

DIODE

D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D4	8-719-931-33	DIODE EQB01-33
D5	8-719-302-00	DIODE RU-2M
D6	8-719-302-00	DIODE RU-2M
D7	8-719-302-00	DIODE RU-2M
D8	8-719-302-00	DIODE RU-2M
D9	8-719-911-19	DIODE 1SS119

FUSE

F1	⚠1-532-237-11	FUSE, TIME-LAG 3.15A/250V
F2	⚠1-532-237-11	FUSE, TIME-LAG 3.15A/250V
F3	⚠1-532-235-11	FUSE, TIME-LAG 0.315A/250V

CONNECTOR

GB1	*1-508-766-00	4P PLUG (M)
GB2	*1-508-767-00	5P PLUG
GB3	*1-508-766-00	4P PLUG (M)
GB4	*1-508-786-00	2P PLUG (M)
GB5	*1-566-056-11	PIN, CONNECTOR 4P
GB6	*1-566-055-11	PIN, CONNECTOR 3P
GB7	*1-566-057-11	PIN, CONNECTOR 5P
GB8	*1-566-063-11	PIN, CONNECTOR 11P
GB9	*1-566-056-11	PIN, CONNECTOR 4P
GB10	*1-566-055-11	PIN, CONNECTOR 3P
GB11	*1-566-060-11	PIN, CONNECTOR 8P
GB12	*1-566-055-11	PIN, CONNECTOR 3P
GB13	*1-566-054-11	PIN, CONNECTOR 2P

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
GB14	*1-508-765-00	3P PLUG (M)				
GB15	*1-566-054-11	PIN, CONNECTOR 2P				

TRANSISTOR

Ref.No.	Part No.	Description				Remark
Q1	8-729-178-54	TRANSISTOR 2SC2785				

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-424-11	CARBON	3.9K	5%	1/4W	
R2	1-249-424-11	CARBON	3.9K	5%	1/4W	
R3	1-249-429-11	CARBON	10K	5%	1/4W	
R4	1-247-693-11	CARBON	27	5%	1/4W	
R5	⚠1-247-807-91	CARBON	100	5%	1/4W	
R6	1-202-842-11	SOLID	220K	10%	1/2W	
R7	1-215-880-00	METAL OXIDE	10	5%	2W	F
R8	1-249-401-11	CARBON	47	5%	1/4W	
R9	1-249-424-11	CARBON	3.9K	5%	1/4W	
R10	1-249-429-11	CARBON	10K	5%	1/4W	
R11	⚠1-249-390-51	CARBON	5.6	5%	1/4W	F

****

*1-619-628-11 GC BOARD
****

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-101-004-00	CERAMIC	0.01MF		50V	
C2	1-101-004-00	CERAMIC	0.01MF		50V	
C3	1-123-817-11	ELECT	22MF	20%	35V	
C5	1-123-817-11	ELECT	22MF	20%	35V	
C6	1-161-059-00	CERAMIC	0.047MF	10%	50V	
C7	1-124-284-00	ELECT	10MF	20%	16V	
C8	1-124-462-00	ELECT	10MF	20%	16V	
C9	1-124-462-00	ELECT	10MF	20%	16V	
C101	1-123-337-00	ELECT	1000MF	20%	25V	

DIODE

Ref.No.	Part No.	Description				Remark
D1	8-719-812-41	DIODE TLR124				
D2	8-719-101-50	DIODE RD5.1E-L2				
D3	8-719-101-83	DIODE RD12E-L2				
D4	8-719-911-19	DIODE 1SS119				
D5	8-719-911-19	DIODE 1SS119				

CONNECTOR

Ref.No.	Part No.	Description				Remark
GC1	*1-508-765-00	3P PLUG (M)				
GC2	*1-566-060-11	PIN, CONNECTOR 8P				
GC101	*1-566-056-11	PIN, CONNECTOR 4P				
GC102	*1-566-056-11	PIN, CONNECTOR 4P				

IC

Ref.No.	Part No.	Description				Remark
IC1	8-759-103-93	IC UPC393C				
IC2	8-759-178-12	IC UPC78L12				

COIL

Ref.No.	Part No.	Description				Remark
L101	1-459-155-00	COIL (WITH CORE) 45UH				
L102	1-459-155-00	COIL (WITH CORE) 45UH				

TRANSISTOR

Ref.No.	Part No.	Description				Remark
Q1	8-729-117-54	TRANSISTOR 2SA1175				
Q2	8-729-177-43	TRANSISTOR 2SD774				
Q3	8-729-900-89	TRANSISTOR DTC144ES				

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-247-849-00	CARBON	5.6K	5%	1/4W	
R2	1-249-441-11	CARBON	100K	5%	1/4W	
R3	1-249-429-11	CARBON	10K	5%	1/4W	
R4	1-247-895-00	CARBON	470K	5%	1/4W	
R5	1-249-429-11	CARBON	10K	5%	1/4W	
R6	1-249-428-11	CARBON	8.2K	5%	1/4W	
R7	1-249-429-11	CARBON	10K	5%	1/4W	
R8	1-249-404-00	CARBON	82	5%	1/4W	
R9	1-249-412-11	CARBON	390	5%	1/4W	
R10	1-249-389-11	CARBON	4.7	5%	1/4W	F
R11	1-249-417-11	CARBON	1K	5%	1/4W	
R14	1-249-435-11	CARBON	33K	5%	1/4W	
R15	1-249-435-11	CARBON	33K	5%	1/4W	
R16	1-249-429-11	CARBON	10K	5%	1/4W	
R17	1-249-407-11	CARBON	150	5%	1/4W	

****

*A-1316-058-A GA BOARD, COMPLETE
****

Ref.No.	Part No.	Description				Remark
	4-374-104-01	HOLDER, TR				
	4-378-619-01	SPACER, MICA				

CAPACITOR

Ref.No.	Part No.	Description				Remark
C601	⚠1-136-131-11	FILM	0.12MF	5%	400V	
C602	⚠1-102-030-91	CERAMIC	330PF	10%	500V	
C603	1-136-103-00	FILM	0.1MF	5%	200V	
C604	1-136-103-00	FILM	0.1MF	5%	200V	
C605	⚠1-102-030-91	CERAMIC	330PF	10%	500V	
C606	⚠1-130-661-11	FILM	0.022MF	3%	600V	
C607	⚠1-102-030-91	CERAMIC	330PF	10%	500V	
C608	1-136-103-00	FILM	0.1MF	5%	200V	
C609	1-136-103-00	FILM	0.1MF	5%	200V	
C610	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V	
C611	⚠1-130-920-11	FILM	0.014MF	5%	600V	
C612	⚠1-136-239-11	FILM	0.01MF	3%	1KV	
C613	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V	
C614	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V	
C615	1-124-347-00	ELECT	100MF	20%	160V	
C616	1-126-101-11	ELECT	100MF	20%	6.3V	
C617	1-123-333-00	ELECT	100MF	20%	16V	
C618	1-123-321-00	ELECT	220MF	20%	16V	
C619	⚠1-130-696-11	FILM	0.024MF	3%	600V	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

GA CAR

Ref.No.	Part No.	Description			Remark
C620	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V
C621	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V
C622	1-124-441-11	ELECT	3900MF	20%	25V
C623	1-124-441-11	ELECT	3900MF	20%	25V
C624	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V
C625	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V
C626	1-124-441-11	ELECT	3900MF	20%	25V
C627	1-124-441-11	ELECT	3900MF	20%	25V
C628	⚠1-130-920-11	FILM	0.014MF	5%	600V
C629	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V
C630	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V
C631	1-123-024-00	ELECT	33MF		160V
C632	1-123-024-00	ELECT	33MF		160V
C633	⚠1-162-318-91	CERAMIC	0.001MF	10%	500V
C634	1-124-667-11	ELECT	10MF	20%	100V
C635	1-106-375-12	MYLAR	0.022MF	10%	100V
C636	1-106-375-12	MYLAR	0.022MF	10%	100V

DIODE

D601	8-719-301-18	DIODE RM2CS
D602	8-719-301-18	DIODE RM2CS
D603	8-719-301-18	DIODE RM2CS
D604	8-719-301-18	DIODE RM2CS
D605	8-719-300-09	DIODE CTU-24S
D606	⚠8-719-936-05	DIODE EQA01-05R
D607	8-719-500-30	DIODE S10SC4M
D608	8-719-500-31	DIODE S10SC4MR
D609	8-719-302-00	DIODE RU-2M
D610	8-719-302-00	DIODE RU-2M
D611	8-719-302-00	DIODE RU-2M
D612	8-719-911-19	DIODE 1SS119
D613	8-719-301-18	DIODE RM2CS
D614	8-719-301-18	DIODE RM2CS

MODULE

IC601	⚠1-235-772-11	POWER MODULE
IC602	⚠1-235-508-11	PROTECTOR MODULE (PM-6)
IC603	⚠1-235-773-11	POWER MODULE
IC604	⚠1-235-774-11	PROTECTOR MODULE (PM-7)

COIL

L601	1-425-612-00	COIL, ARE-CORE
L602	1-425-612-00	COIL, ARE-CORE
L603	1-425-612-00	COIL, ARE-CORE
L604	1-425-612-00	COIL, ARE-CORE
L605	1-425-612-00	COIL, ARE-CORE
L606	1-425-612-00	COIL, ARE-CORE
L607	1-425-612-00	COIL, ARE-CORE
L608	1-425-612-00	COIL, ARE-CORE
L609	1-459-407-00	COIL, FERRITE CHOKE
L610	1-425-612-00	COIL, ARE-CORE
L611	1-459-407-00	COIL, FERRITE CHOKE
L612	1-421-421-00	COIL, CHOKE 100UH

Ref.No.	Part No.	Description	Remark
L613	1-425-612-00	COIL, ARE-CORE	
L614	1-407-685-00	MICRO INDUCTOR 2.2UH	
L615	1-407-556-00	CHOKE COIL	

TRANSISTOR

Q601	⚠8-729-902-00	TRANSISTOR 2SC3163
Q602	⚠8-729-902-00	TRANSISTOR 2SC3163
Q603	⚠8-729-902-00	TRANSISTOR 2SC3163
Q604	⚠8-729-902-00	TRANSISTOR 2SC3163

RESISTOR

R601	1-202-846-00	SOLID	470K	10%	1/2W	
R602	⚠1-202-846-91	SOLID	470K	10K	1/2W	
R603	⚠1-216-396-51	METAL OXIDE	3.9	5%	3W	F
R604	⚠1-216-396-51	METAL OXIDE	3.9	5%	3W	F
R605	1-202-842-11	SOLID	220K	10%	1/2W	
R606	1-202-846-00	SOLID	470K	10%	1/2W	
R607	⚠1-216-396-51	METAL OXIDE	3.9	5%	3W	F
R608	⚠1-216-396-51	METAL OXIDE	3.9	5%	3W	F
R609	1-207-451-00	WIREWOUND	0.1	10%	1/2W	
R610	⚠1-207-451-11	WIREWOUND	0.1	10%	1/2W	
R611	⚠1-217-243-11	WIREWOUND	0.33	10%	3W	F
R612	⚠1-247-700-51	CARBON	100	5%	1/4W	F
R613	1-247-713-11	CARBON	1K	5%	1/4W	
R614	⚠1-249-405-51	CARBON	100	5%	1/4W	F
R615	⚠1-249-405-51	CARBON	100	5%	1/4W	F
R616	1-247-701-11	CARBON	120	5%	1/4W	
R617	⚠1-249-389-11	CARBON	4.7	5%	1/4W	F

TRANSFORMER

T601	⚠1-421-793-11	PRT
T602	⚠1-421-833-11	PIT
T603	⚠1-421-793-11	PRT
T604	⚠1-421-832-11	PIT
T605	⚠1-421-718-11	H.PCT

****

*A-1330-691-A CA R BOARD, COMPLETE
****

	4-370-970-01	SPACER, TR
	*4-378-693-01	RETAINER (A), TR
	*4-378-694-01	RETAINER (B), TR

CAPACITOR

C1	1-124-462-00	ELECT	10MF	20%	16V
C3	1-123-323-00	ELECT	470MF	20%	16V
C4	1-101-006-00	CERAMIC	0.047MF		50V
C6	1-124-462-00	ELECT	10MF	20%	16V
C8	1-123-323-00	ELECT	470MF	20%	16V
C9	1-101-006-00	CERAMIC	0.047MF		50V
C10	1-101-006-00	CERAMIC	0.047MF		50V
C11	1-101-006-00	CERAMIC	0.047MF		50V
C12	1-101-006-00	CERAMIC	0.047MF		50V

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description			Remark
C13	1-102-971-00	CERAMIC	82PF	5%	50V
C14	1-102-963-00	CERAMIC	33PF	5%	50V
C17	1-123-333-00	ELECT	100MF	20%	16V
C18	1-101-006-00	CERAMIC	0.047MF		50V
C19	1-123-007-00	ELECT	4.7MF		350V
C20	1-102-050-00	CERAMIC	0.01MF		500V
C21	1-102-050-00	CERAMIC	0.01MF		500V
C22	1-102-050-00	CERAMIC	0.01MF		500V
C23	1-102-228-00	CERAMIC	470PF	10%	500V
C24	1-101-006-00	CERAMIC	0.047MF		50V
C25	1-101-006-00	CERAMIC	0.047MF		50V
C26	1-101-006-00	CERAMIC	0.047MF		50V
C27	1-123-611-00	ELECT	1MF	20%	50V
C28	1-101-004-00	CERAMIC	0.01MF		50V
C30	1-102-228-00	CERAMIC	470PF	10%	500V

CONNECTOR

CAR1	*1-566-055-11	PIN, CONNECTOR 3P
CAR2	*1-566-055-11	PIN, CONNECTOR 3P
CAR4	*1-566-060-11	PIN, CONNECTOR 8P
CAR6	*1-566-055-11	PIN, CONNECTOR 3P

DIODE

D1	8-719-101-64	DIODE RD6.8E-L2
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D4	8-719-911-19	DIODE 1SS119
D5	8-719-937-06	DIODE EQA01-06S
D6	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D8	8-719-911-19	DIODE 1SS119
D9	8-719-911-19	DIODE 1SS119
D10	8-719-911-19	DIODE 1SS119
D11	8-719-300-80	DIODE RU-1C
D12	8-719-300-80	DIODE RU-1C
D13	8-719-911-19	DIODE 1SS119
D14	8-719-911-19	DIODE 1SS119
D15	8-719-911-19	DIODE 1SS119

IC

IC1	8-759-990-82	IC TL082CP

COIL

L1	1-459-155-00	COIL (WITH CORE) 45UH
L2	1-459-155-00	COIL (WITH CORE) 45UH
L3	1-407-684-00	MICRO INDUCTOR 1.8UH
L4	1-410-396-41	FERRITE BEAD INDUCTOR

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-110-52	TRANSISTOR 2SA1005-L	
Q2	8-765-300-00	TRANSISTOR 2SC2009	
Q3	8-765-300-00	TRANSISTOR 2SC2009	
Q4	8-765-300-00	TRANSISTOR 2SC2009	
Q5	8-729-110-52	TRANSISTOR 2SA1005-L	
Q6	⚠8-765-300-08	TRANSISTOR 2SC2009-8	
Q7	8-729-801-88	TRANSISTOR 2SA1381	
Q8	⚠8-729-801-97	TRANSISTOR 2SC3503-D	
Q9	8-729-801-97	TRANSISTOR 2SC3503	
Q10	8-729-801-88	TRANSISTOR 2SA1381	
Q11	8-729-115-10	TRANSISTOR 2SK105A-10	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-405-11	CARBON	100	5%	1/4W	
R2	1-215-429-00	METAL	2.2K	1%	1/6W	
R4	1-215-457-00	METAL	33K	1%	1/6W	
R5	1-249-427-11	CARBON	6.8K	5%	1/4W	
R6	1-249-425-11	CARBON	4.7K	5%	1/4W	
R7	1-249-405-11	CARBON	100	5%	1/4W	
R8	1-249-407-11	CARBON	150	5%	1/4W	
R9	1-249-405-11	CARBON	100	5%	1/4W	
R10	1-249-399-11	CARBON	33	5%	1/4W	
R11	1-249-399-11	CARBON	33	5%	1/4W	
R12	1-249-405-11	CARBON	100	5%	1/4W	
R13	1-247-849-00	CARBON	5.6K	5%	1/4W	
R14	1-249-407-11	CARBON	150	5%	1/4W	
R15	1-215-433-00	METAL	3.3K	1%	1/6W	
R16	1-249-401-11	CARBON	47	5%	1/4W	
R17	1-215-405-00	METAL	220	1%	1/6W	
R18	1-249-411-11	CARBON	330	5%	1/4W	
R19	1-249-398-11	CARBON	27	5%	1/4W	
R20	1-249-408-11	CARBON	180	5%	1/4W	
R22	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R23	⚠1-247-700-51	CARBON	100	5%	1/4W	F
R24	1-249-469-11	CARBON	100K	5%	1/4W	
R25	1-249-469-11	CARBON	100K	5%	1/4W	
R26	1-215-948-00	METAL OXIDE	10K	5%	5W	F
R27	1-249-400-11	CARBON	39	5%	1/4W	
R28	1-214-777-00	METAL	100K	1%	1/4W	
R29	1-214-777-00	METAL	100K	1%	1/4W	
R30	1-249-400-11	CARBON	39	5%	1/4W	
R31	1-247-701-11	CARBON	120	5%	1/4W	F
R32	1-249-404-00	CARBON	82	5%	1/4W	
R33	1-249-404-00	CARBON	82	5%	1/4W	
R34	1-202-557-00	SOLID	220	5%	1/2W	
R35	1-249-405-11	CARBON	100	5%	1/4W	
R36	1-215-449-00	METAL	15K	1%	1/6W	
R37	1-249-429-11	CARBON	10K	5%	1/4W	
R38	1-249-425-11	CARBON	4.7K	5%	1/4W	
R39	1-249-429-11	CARBON	10K	5%	1/4W	
R40	1-202-473-00	SOLID	5.6M	5%	1/4W	
R41	1-249-429-11	CARBON	10K	5%	1/4W	
R42	1-215-441-00	METAL	6.8K	1%	1/6W	
R43	1-249-395-11	CARBON	15	5%	1/4W	
R44	⚠1-247-701-51	CARBON	120	5%	1/4W	F
R45	1-249-411-11	CARBON	330	5%	1/4W	
R46	1-215-373-31	METAL	10	1%	1/6W	
R47	1-249-425-11	CARBON	4.7K	5%	1/4W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

CAR CAG

Ref.No.	Part No.	Description				Remark
	*A-1330-692-A	CA G BOARD, COMPLETE *********************				
	4-370-970-01	SPACER, TR				
	*4-378-693-01	RETAINER (A), TR				
	*4-378-694-01	RETAINER (B), TR				
		CAPACITOR				
C1	1-124-462-00	ELECT	10MF	20%	16V	
C3	1-123-323-00	ELECT	470MF	20%	16V	
C4	1-101-006-00	CERAMIC	0.047MF		50V	
C6	1-124-462-00	ELECT	10MF	20%	16V	
C8	1-123-323-00	ELECT	470MF	20%	16V	
C9	1-101-006-00	CERAMIC	0.047MF		50V	
C10	1-101-006-00	CERAMIC	0.047MF		50V	
C11	1-101-006-00	CERAMIC	0.047MF		50V	
C12	1-101-006-00	CERAMIC	0.047MF		50V	
C13	1-102-971-00	CERAMIC	82PF	5%	50V	
C14	1-102-963-00	CERAMIC	33PF	5%	50V	
C17	1-123-333-00	ELECT	100MF	20%	16V	
C18	1-101-006-00	CERAMIC	0.047MF		50V	
C19	1-123-007-00	ELECT	4.7MF		350V	
C20	1-102-050-00	CERAMIC	0.01MF		500V	
C21	1-102-050-00	CERAMIC	0.01MF		500V	
C22	1-102-050-00	CERAMIC	0.01MF		500V	
C23	1-102-228-00	CERAMIC	470PF	10%	500V	
C24	1-101-006-00	CERAMIC	0.047MF		50V	
C25	1-101-006-00	CERAMIC	0.047MF		50V	
C26	1-101-006-00	CERAMIC	0.047MF		50V	
C27	1-123-611-00	ELECT	1MF	20%	50V	
C28	1-101-004-00	CERAMIC	0.01MF		50V	
C30	1-102-228-00	CERAMIC	470PF	10%	500V	
		CONNECTOR				
CAG1	*1-566-055-11	PIN, CONNECTOR 3P				
CAG2	*1-566-055-11	PIN, CONNECTOR 3P				
CAG4	*1-566-060-11	PIN, CONNECTOR 8P				
CAG5	*1-566-060-11	PIN, CONNECTOR 8P				
CAG6	*1-566-055-11	PIN, CONNECTOR 3P				
		DIODE				
D1	8-719-101-64	DIODE RD6.8E-L2				
D2	8-719-911-19	DIODE 1SS119				
D3	8-719-911-19	DIODE 1SS119				
D4	8-719-911-19	DIODE 1SS119				
D5	8-719-937-06	DIODE EQA01-06S				
D6	8-719-911-19	DIODE 1SS119				
D7	8-719-911-19	DIODE 1SS119				
D8	8-719-911-19	DIODE 1SS119				
D9	8-719-911-19	DIODE 1SS119				
D10	8-719-911-19	DIODE 1SS119				

Ref.No.	Part No.	Description				Remark
D11	8-719-300-80	DIODE RU-1C				
D12	8-719-300-80	DIODE RU-1C				
D13	8-719-911-19	DIODE 1SS119				
D14	8-719-911-19	DIODE 1SS119				
D15	8-719-911-19	DIODE 1SS119				
		IC				
IC1	8-759-990-82	IC TL082CP				
		COIL				
L1	1-459-155-00	COIL (WITH CORE) 45UH				
L2	1-459-155-00	COIL (WITH CORE) 45UH				
L3	1-407-684-00	MICRO INDUCTOR 1.8UH				
L4	1-410-396-41	FERRITE BEAD INDUCTOR				
		TRANSISTOR				
Q1	8-729-110-52	TRANSISTOR 2SA1005-L				
Q2	8-765-300-00	TRANSISTOR 2SC2009				
Q3	8-765-300-00	TRANSISTOR 2SC2009				
Q4	8-765-300-00	TRANSISTOR 2SC2009				
Q5	8-729-110-52	TRANSISTOR 2SA1005-L				
Q6	⚠8-765-300-08	TRANSISTOR 2SC2009-8				
Q7	8-729-801-88	TRANSISTOR 2SA1381				
Q8	⚠8-729-801-97	TRANSISTOR 2SC3503-D				
Q9	8-729-801-97	TRANSISTOR 2SC3503				
Q10	8-729-801-88	TRANSISTOR 2SA1381				
Q11	8-729-115-10	TRANSISTOR 2SK105A-10				
		RESISTOR				
R1	1-249-405-11	CARBON	100	5%	1/4W	
R2	1-215-429-00	METAL	2.2K	1%	1/6W	
R4	1-215-457-00	METAL	33K	1%	1/6W	
R5	1-249-427-11	CARBON	6.8K	5%	1/4W	
R6	1-249-425-11	CARBON	4.7K	5%	1/4W	
R7	1-249-405-11	CARBON	100	5%	1/4W	
R8	1-249-407-11	CARBON	150	5%	1/4W	
R9	1-249-405-11	CARBON	100	5%	1/4W	
R10	1-249-399-11	CARBON	33	5%	1/4W	
R11	1-249-399-11	CARBON	33	5%	1/4W	
R12	1-249-405-11	CARBON	100	5%	1/4W	
R13	1-247-849-00	CARBON	5.6K	5%	1/4W	
R14	1-249-407-11	CARBON	150	5%	1/4W	
R15	1-215-433-00	METAL	3.3K	1%	1/6W	
R16	1-249-401-11	CARBON	47	5%	1/4W	
R17	1-215-405-00	METAL	220	1%	1/6W	
R18	1-249-411-11	CARBON	330	5%	1/4W	
R19	1-249-398-11	CARBON	27	5%	1/4W	
R20	1-249-408-11	CARBON	180	5%	1/4W	
R22	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R23	⚠1-247-700-51	CARBON	100	5%	1/4W	F
R24	1-249-469-11	CARBON	100K	5%	1/4W	
R25	1-249-469-11	CARBON	100K	5%	1/4W	
R26	1-215-948-00	METAL OXIDE	10K	5%	5W	F

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
R27	1-249-400-11	CARBON	39	5%	1/4W	
R28	1-214-777-00	METAL	100K	1%	1/4W	
R29	1-214-777-00	METAL	100K	1%	1/4W	
R30	1-249-400-11	CARBON	39	5%	1/4W	
R31	1-247-701-11	CARBON	120	5%	1/4W	F
R32	1-249-404-00	CARBON	82	5%	1/4W	
R33	1-249-404-00	CARBON	82	5%	1/4W	
R34	1-202-557-00	SOLID	220	5%	1/2W	
R35	1-249-405-11	CARBON	100	5%	1/4W	
R36	1-215-449-00	METAL	15K	1%	1/6W	
R37	1-249-429-11	CARBON	10K	5%	1/4W	
R38	1-249-425-11	CARBON	4.7K	5%	1/4W	
R39	1-249-429-11	CARBON	10K	5%	1/4W	
R40	1-202-473-00	SOLID	5.6M	5%	1/4W	
R41	1-249-429-11	CARBON	10K	5%	1/4W	
R42	1-215-441-00	METAL	6.8K	1%	1/6W	
R43	1-249-395-11	CARBON	15	5%	1/4W	
R44	⚠1-247-701-51	CARBON	120	5%	1/4W	F
R45	1-249-411-11	CARBON	330	5%	1/4W	
R46	1-215-373-31	METAL	10	1%	1/6W	
R47	1-249-425-11	CARBON	4.7K	5%	1/4W	

****

*A-1330-693-A CA B BOARD, COMPLETE
****

	4-370-970-01	SPACER, TR
	*4-378-693-01	RETAINER (A), TR
	*4-378-694-01	RETAINER (B), TR

CAPACITOR

C1	1-124-462-00	ELECT	10MF	20%	16V
C3	1-123-323-00	ELECT	470MF	20%	16V
C4	1-101-006-00	CERAMIC	0.047MF		50V
C6	1-124-462-00	ELECT	10MF	20%	16V
C8	1-123-323-00	ELECT	470MF	20%	16V
C9	1-101-006-00	CERAMIC	0.047MF		50V
C10	1-101-006-00	CERAMIC	0.047MF		50V
C11	1-101-006-00	CERAMIC	0.047MF		50V
C12	1-101-006-00	CERAMIC	0.047MF		50V
C13	1-101-888-00	CERAMIC	68PF	5%	50V
C14	1-102-963-00	CERAMIC	33PF	5%	50V
C17	1-123-333-00	ELECT	100MF	20%	16V
C18	1-101-006-00	CERAMIC	0.047MF		50V
C19	1-123-007-00	ELECT	4.7MF		350V
C20	1-102-050-00	CERAMIC	0.01MF		500V
C21	1-102-050-00	CERAMIC	0.01MF		500V
C22	1-102-050-00	CERAMIC	0.01MF		500V
C23	1-102-228-00	CERAMIC	470PF	10%	500V
C24	1-101-006-00	CERAMIC	0.047MF		50V
C25	1-101-006-00	CERAMIC	0.047MF		50V
C26	1-101-006-00	CERAMIC	0.047MF		50V

Ref.No.	Part No.	Description				Remark
C27	1-123-611-00	ELECT	1MF	20%	50V	
C28	1-101-004-00	CERAMIC	0.01MF		50V	
C30	1-102-228-00	CERAMIC	470PF	10%	500V	

CONNECTOR

CAB1	*1-566-055-11	PIN, CONNECTOR 3P
CAB2	*1-566-055-11	PIN, CONNECTOR 3P
CAB3	*1-566-057-11	PIN, CONNECTOR 5P
CAB4	*1-566-060-11	PIN, CONNECTOR 8P
CAB6	*1-566-055-11	PIN, CONNECTOR 3P
CAB7	*1-566-056-11	PIN, CONNECTOR 4P

DIODE

D1	8-719-101-64	DIODE RD6.8E-L2
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D4	8-719-911-19	DIODE 1SS119
D5	8-719-937-06	DIODE EQA01-06S
D6	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D8	8-719-911-19	DIODE 1SS119
D9	8-719-911-19	DIODE 1SS119
D10	8-719-911-19	DIODE 1SS119
D11	8-719-300-80	DIODE RU-1C
D12	8-719-300-80	DIODE RU-1C
D13	8-719-911-19	DIODE 1SS119
D14	8-719-911-19	DIODE 1SS119
D15	8-719-911-19	DIODE 1SS119

IC

IC1	8-759-990-82	IC TL082CP

COIL

L1	1-459-155-00	COIL (WITH CORE) 45UH
L2	1-459-155-00	COIL (WITH CORE) 45UH
L3	1-407-684-00	MICRO INDUCTOR 1.8UH
L4	1-410-396-41	FERRITE BEAD INDUCTOR

TRANSISTOR

Q1	8-729-110-52	TRANSISTOR 2SA1005-L
Q2	8-765-300-00	TRANSISTOR 2SC2009
Q3	8-765-300-00	TRANSISTOR 2SC2009
Q4	8-765-300-00	TRANSISTOR 2SC2009
Q5	8-729-110-52	TRANSISTOR 2SA1005-L
Q6	⚠8-765-300-08	TRANSISTOR 2SC2009-8
Q7	8-729-801-88	TRANSISTOR 2SA1381
Q8	⚠8-729-801-97	TRANSISTOR 2SC3503-D
Q9	8-729-801-97	TRANSISTOR 2SC3503
Q10	8-729-801-88	TRANSISTOR 2SA1381
Q11	8-729-115-10	TRANSISTOR 2SK105A-10

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

CAB CBR CBG

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-405-11	CARBON	100	5%	1/4W	
R2	1-215-429-00	METAL	2.2K	1%	1/6W	
R4	1-215-457-00	METAL	33K	1%	1/6W	
R5	1-249-427-11	CARBON	6.8K	5%	1/4W	
R6	1-249-425-11	CARBON	4.7K	5%	1/4W	
R7	1-249-405-11	CARBON	100	5%	1/4W	
R8	1-249-407-11	CARBON	150	5%	1/4W	
R9	1-249-405-11	CARBON	100	5%	1/4W	
R10	1-249-399-11	CARBON	33	5%	1/4W	
R11	1-249-399-11	CARBON	33	5%	1/4W	
R12	1-249-405-11	CARBON	100	5%	1/4W	
R13	1-247-849-00	CARBON	5.6K	5%	1/4W	
R14	1-249-407-11	CARBON	150	5%	1/4W	
R15	1-215-433-00	METAL	3.3K	1%	1/6W	
R16	1-249-401-11	CARBON	47	5%	1/4W	
R17	1-215-405-00	METAL	220	1%	1/6W	
R18	1-249-411-11	CARBON	330	5%	1/4W	
R19	1-249-398-11	CARBON	27	5%	1/4W	
R20	1-249-408-11	CARBON	180	5%	1/4W	
R22	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R23	⚠1-247-700-51	CARBON	100	5%	1/4W	F
R24	1-249-469-11	CARBON	100K	5%	1/4W	
R25	1-249-469-11	CARBON	100K	5%	1/4W	
R26	1-215-948-00	METAL OXIDE	10K	5%	5W	F
R27	1-249-400-11	CARBON	39	5%	1/4W	
R28	1-214-777-00	METAL	100K	1%	1/4W	
R29	1-214-777-00	METAL	100K	1%	1/4W	
R30	1-249-400-11	CARBON	39	5%	1/4W	
R31	1-247-701-11	CARBON	120	5%	1/4W	F
R32	1-249-404-00	CARBON	82	5%	1/4W	
R33	1-249-404-00	CARBON	82	5%	1/4W	
R34	1-202-557-00	SOLID	220	5%	1/2W	
R35	1-249-405-11	CARBON	100	5%	1/4W	
R36	1-215-449-00	METAL	15K	1%	1/6W	
R37	1-249-429-11	CARBON	10K	5%	1/4W	
R38	1-249-425-11	CARBON	4.7K	5%	1/4W	
R39	1-249-429-11	CARBON	10K	5%	1/4W	
R40	1-202-473-00	SOLID	5.6M	5%	1/4W	
R41	1-249-429-11	CARBON	10K	5%	1/4W	
R42	1-215-441-00	METAL	6.8K	1%	1/6W	
R43	1-249-395-11	CARBON	15	5%	1/4W	
R44	⚠1-247-701-51	CARBON	120	5%	1/4W	F
R45	1-249-411-11	CARBON	330	5%	1/4W	
R46	1-215-389-00	METAL	47	1%	1/6W	
R47	1-249-425-11	CARBON	4.7K	5%	1/4W	

Ref.No.	Part No.	Description				Remark
	*1-617-545-21	CBR BOARD *********				
	1-526-812-11	SOCKET, CRT				
		CAPACITOR				
C1	1-162-115-00	CERAMIC	330PF	10%	2KV	
C2	1-162-115-00	CERAMIC	330PF	10%	2KV	
		CONNECTOR				
CBR1	*1-508-784-00	1P PLUG				
CBR2	*1-566-055-11	PIN, CONNECTOR 3P				
CBR3	*1-566-055-11	PIN, CONNECTOR 3P				
CBR4	*1-508-786-00	2P PLUG (M)				
		COIL				
L1	1-407-364-00	COIL, SPOOK CHOKE 3.3UH				
L2	1-407-364-00	COIL, SPOOK CHOKE 3.3UH				
L3	1-407-685-00	MICRO INDUCTOR 2.2UH				
		NEON LAMP				
NL1	1-519-013-13	DISCHARGE TUBE				
		RESISTOR				
R1	1-202-827-11	SOLID	5.6K	10%	1/2W	
R2	1-202-847-00	SOLID	560K	10%	1/2W	
R3	1-202-823-11	SOLID	2.7K	10%	1/2W	
R4	1-202-818-00	SOLID	1K	10%	1/2W	
		SPARK GAP				
SG1	1-519-063-XX	DISCHARGING GAP				

****

Ref.No.	Part No.	Description				Remark
	*1-617-546-21	CBG BOARD *********				
	1-526-812-11	SOCKET, CRT				
		CAPACITOR				
C1	1-162-115-00	CERAMIC	330PF	10%	2KV	
C2	1-162-115-00	CERAMIC	330PF	10%	2KV	
		CONNECTOR				
CBG1	*1-508-784-00	1P PLUG				
CBG2	*1-566-055-11	PIN, CONNECTOR 3P				
CBG3	*1-566-055-11	PIN, CONNECTOR 3P				
CBG4	*1-508-786-00	2P PLUG (M)				
		COIL				
L1	1-407-364-00	COIL, SPOOK CHOKE 3.3UH				
L2	1-407-364-00	COIL, SPOOK CHOKE 3.3UH				
L3	1-407-685-00	MICRO INDUCTOR 2.2UH				

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
		NEON LAMP				
NL1	1-519-013-13	DISCHARGE TUBE				
		RESISTOR				
R1	1-202-827-11	SOLID	5.6K	10%	1/2W	
R2	1-202-847-00	SOLID	560K	10%	1/2W	
R3	1-202-823-11	SOLID	2.7K	10%	1/2W	
R4	1-202-818-00	SOLID	1K	10%	1/2W	
		SPARK GAP				
SG1	1-519-063-XX	DISCHARGING GAP				

****

Ref.No.	Part No.	Description				Remark
	*1-617-547-21	CBB BOARD *********				
	1-526-812-11	SOCKET, CRT				
		CAPACITOR				
C1	1-162-115-00	CERAMIC	330PF	10%	2KV	
C2	1-162-115-00	CERAMIC	330PF	10%	2KV	
		CONNECTOR				
CBB1	*1-508-784-00	1P PLUG				
CBB2	*1-566-055-11	PIN, CONNECTOR 3P				
CBB3	*1-566-055-11	PIN, CONNECTOR 3P				
CBB4	*1-508-786-00	2P PLUG (M)				
		COIL				
L1	1-407-364-00	COIL, SPOOK CHOKE 3.3UH				
L2	1-407-364-00	COIL, SPOOK CHOKE 3.3UH				
L3	1-407-685-00	MICRO INDUCTOR 2.2UH				
		NEON LAMP				
NL1	1-519-013-13	DISCHARGE TUBE				
		RESISTOR				
R1	1-202-827-11	SOLID	5.6K	10%	1/2W	
R2	1-202-847-00	SOLID	560K	10%	1/2W	
R3	1-202-823-11	SOLID	2.7K	10%	1/2W	
R4	1-202-818-00	SOLID	1K	10%	1/2W	
		SPARK GAP				
SG1	1-519-063-XX	DISCHARGING GAP				

****

Ref.No.	Part No.	Description				Remark
	*1-617-553-21	EB BOARD ********				
		CONNECTOR				
EB1	*1-506-348-XX	3P PLUG (L)				
EB2	*1-566-055-11	PIN, CONNECTOR 3P				
		TRANSFORMER				
T1	⚠1-421-834-11	TRANSFORMER, FERRITE				

****

Ref.No.	Part No.	Description				Remark
	*1-617-554-21	EC BOARD ********				
		CAPACITOR				
C901	1-102-327-00	CERAMIC	330PF	15%	1.5KV	
C902	1-102-327-00	CERAMIC	330PF	15%	1.5KV	
		CONNECTOR				
EC1	*1-566-041-11	PIN, CONNECTOR 2P				
EC2	*1-566-041-11	PIN, CONNECTOR 2P				
		RESISTOR				
R901	1-202-822-00	SOLID	2.2K	10%	1/2W	
R902	1-202-822-00	SOLID	2.2K	10%	1/2W	
		SPARK GAP				
SG901	1-519-063-XX	DISCHARGING GAP				
SG902	1-519-063-XX	DISCHARGING GAP				

****

Ref.No.	Part No.	Description				Remark
	*A-1345-682-A	EA BOARD, COMPLETE ******************				
		CAPACITOR				
C1	1-123-379-00	ELECT	0.47MF	20%	50V	
C2	1-102-973-00	CERAMIC	100PF	5%	50V	
C4	1-130-481-00	MYLAR	0.0068MF	5%	50V	
C5	1-123-343-00	ELECT	33MF	20%	25V	
C6	1-124-270-11	ELECT	0.47MF	20%	50V	
C7	1-123-379-00	ELECT	0.47MF	20%	50V	
C8	1-102-973-00	CERAMIC	100PF	5%	50V	
C10	1-136-155-00	FILM	0.015MF	5%	50V	
C11	1-123-343-00	ELECT	33MF	20%	25V	
C12	1-123-356-00	ELECT	10MF	20%	16V	
C13	1-123-318-00	ELECT	33MF	20%	16V	
C15	1-123-356-00	ELECT	10MF	20%	16V	
C16	1-108-618-91	MYLAR	0.0022MF	10%	100V	
C17	1-136-173-00	FILM	0.47MF	5%	50V	
C18	1-123-381-00	ELECT	2.2MF	20%	50V	
C19	1-123-332-00	ELECT	47MF	20%	16V	
C20	1-124-648-00	ELECT	4.7MF	20%	35V	
C21	1-125-195-00	ELECT	4.7MF		100V	
C22	1-123-356-00	ELECT	10MF	20%	25V	
C23	1-123-333-00	ELECT	100MF	20%	16V	
C24	1-102-038-00	CERAMIC	0.001MF		500V	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

EA

Ref.No.	Part No.	Description			Remark
C25	1-123-324-00	ELECT	1000MF	20%	16V
C26	1-108-692-81	MYLAR	0.01MF	10%	200V
C27	1-123-024-00	ELECT	33MF		160V
C28	1-136-178-00	FILM	0.0047MF	3%	1.6KV
C29	1-136-186-00	FILM	2.4MF	5%	200V
C30	1-136-186-00	FILM	2.4MF	5%	200V
C31	1-136-186-00	FILM	2.4MF	5%	200V
C32	1-124-940-00	ELECT	1MF	20%	160V
C33	1-124-347-00	ELECT	100MF	20%	160V
C34	1-108-425-00	MYLAR	0.022MF	10%	200V
C35	1-123-359-00	ELECT	47MF	20%	50V
C36	1-136-217-00	MYLAR	1.5MF	10%	250V
C37	1-136-184-00	MYLAR	0.68MF	10%	250V
C38	⚠1-136-091-11	FILM	0.0068MF	3%	2KV
C39	⚠1-136-179-11	FILM	1.5MF	5%	200V
C40	⚠1-136-179-11	FILM	1.5MF	5%	200V
C41	1-136-157-00	FILM	0.022MF	5%	50V
C42	1-136-171-00	FILM	0.33MF	5%	50V
C43	1-124-236-00	ELECT	47MF	20%	16V
C44	1-124-236-00	ELECT	47MF	20%	16V
C45	1-123-622-00	ELECT	22MF	20%	16V
C46	1-136-063-00	FILM	0.0055MF	3%	1.4KV
C47	1-136-089-00	FILM	0.0056MF	3%	2KV
C48	1-123-321-00	ELECT	220MF	20%	16V

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D3	8-719-911-19	DIODE 1SS119	
D4	8-719-911-19	DIODE 1SS119	
D5	8-719-911-19	DIODE 1SS119	
D6	8-719-911-19	DIODE 1SS119	
D7	8-719-911-19	DIODE 1SS119	
D8	8-719-100-35	DIODE RD5.6E-B2	
D10	8-719-911-19	DIODE 1SS119	
D11	8-719-911-19	DIODE 1SS119	
D12	8-719-911-19	DIODE 1SS119	
D13	8-719-911-19	DIODE 1SS119	
D15	8-719-900-95	DIODE V09G	
D16	8-719-305-15	DIODE GH3F	
D17	8-719-100-57	DIODE RD10E-B2	
D18	8-719-900-95	DIODE V09G	
D19	8-719-900-95	DIODE V09G	
D20	8-719-900-95	DIODE V09G	
D21	8-719-305-15	DIODE GH3F	
D22	8-719-911-19	DIODE 1SS119	
D23	8-719-911-19	DIODE 1SS119	
D24	8-719-911-19	DIODE 1SS119	
D25	8-719-911-19	DIODE 1SS119	
D26	8-719-903-09	DIODE V30N	
D27	8-719-903-09	DIODE V30N	
D28	8-719-900-95	DIODE V09G	
D29	8-719-900-95	DIODE V09G	
D30	8-719-900-95	DIODE V09G	
D31	8-719-911-19	DIODE 1SS119	
D32	8-719-911-19	DIODE 1SS119	

CONNECTOR

Ref.No.	Part No.	Description	Remark
EA1	*1-566-057-11	PIN, CONNECTOR 5P	
EA2	*1-566-055-11	PIN, CONNECTOR 3P	
EA3	*1-566-056-11	PIN, CONNECTOR 4P	
EA4	*1-566-060-11	PIN, CONNECTOR 8P	
EA5	*1-566-055-11	PIN, CONNECTOR 3P	
EA6	*1-506-348-XX	3P PLUG (L)	
EA7	*1-506-348-XX	3P PLUG (L)	
EA8	*1-508-784-00	1P PLUG	
EA9	*1-508-786-00	2P PLUG (M)	
EA10	*1-506-348-XX	3P PLUG (L)	
EA11	1-506-348-XX	6P PLUG	
EA12	*1-566-055-11	PIN, CONNECTOR 3P	
EA13	*1-566-055-11	PIN, CONNECTOR 3P	
EA14	*1-566-056-11	PIN, CONNECTOR 4P	
EA15	*1-566-056-11	PIN, CONNECTOR 4P	

IC

Ref.No.	Part No.	Description	Remark
IC2	8-759-103-93	IC UPC393C	
IC3	8-759-103-93	IC UPC393C	
IC4	⚠8-759-178-12	IC UPC78L12	

COIL

Ref.No.	Part No.	Description	Remark
L1	1-408-231-00	MICRO INDUCTOR 1MMH	
L2	1-459-353-00	COIL, FERRITE (HLC)	
L3	1-459-155-00	COIL (WITH CORE) 45UH	
L4	1-459-155-00	COIL (WITH CORE) 45UH	

NEON LAMP

Ref.No.	Part No.	Description	Remark
NL1	1-519-237-11	LAMP, NEON	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-117-54	TRANSISTOR 2SA1175	
Q2	⚠8-729-378-92	TRANSISTOR 2SD789-4	
Q4	8-729-117-54	TRANSISTOR 2SA1175	
Q5	⚠8-729-378-92	TRANSISTOR 2SD789-4	
Q7	8-729-117-54	TRANSISTOR 2SA1175	
Q8	8-729-178-54	TRANSISTOR 2SC2785	
Q9	8-729-178-54	TRANSISTOR 2SC2785	
Q10	8-729-178-54	TRANSISTOR 2SC2785	
Q11	8-729-178-54	TRANSISTOR 2SC2785	
Q12	8-729-304-92	TRANSISTOR 2SB649A	
Q13	8-729-386-12	TRANSISTOR 2SB861	
Q14	8-729-306-92	TRANSISTOR 2SD669A	
Q15	8-729-306-92	TRANSISTOR 2SD669A	
Q16	8-729-238-32	TRANSISTOR 2SC2383	
Q17	8-729-238-32	TRANSISTOR 2SC2383	
Q18	8-729-168-82	TRANSISTOR 2SC2688	
Q19	8-729-178-54	TRANSISTOR 2SC2785	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
Q20	8-729-304-92	TRANSISTOR 2SB649A				
Q21	8-729-117-54	TRANSISTOR 2SA1175				

RESISTOR

Ref.No.	Part No.	Description				Remark
R7	1-249-417-11	CARBON	1K	5%	1/4W	
R8	1-249-417-11	CARBON	1K	5%	1/4W	
R9	1-249-405-11	CARBON	100	5%	1/4W	
R10	1-249-421-11	CARBON	2.2K	5%	1/4W	
R11	1-249-405-11	CARBON	100	5%	1/4W	
R18	1-249-417-11	CARBON	1K	5%	1/4W	
R19	1-249-417-11	CARBON	1K	5%	1/4W	
R20	1-249-405-11	CARBON	100	5%	1/4W	
R21	1-249-421-11	CARBON	2.2K	5%	1/4W	
R22	1-249-405-11	CARBON	100	5%	1/4W	
R23	1-249-425-11	CARBON	4.7K	5%	1/4W	
R24	1-249-435-11	CARBON	33K	5%	1/4W	
R25	1-249-429-11	CARBON	10K	5%	1/4W	
R26	1-249-433-11	CARBON	22K	5%	1/4W	
R27	1-249-421-11	CARBON	2.2K	5%	1/4W	
R28	1-249-423-11	CARBON	3.3K	5%	1/4W	
R29	1-249-417-11	CARBON	1K	5%	1/4W	
R30	1-249-438-11	CARBON	56K	5%	1/4W	
R31	1-215-465-00	METAL	68K	1%	1/6W	
R32	1-249-435-11	CARBON	33K	5%	1/4W	
R33	1-249-417-11	CARBON	1K	5%	1/4W	
R34	1-249-429-11	CARBON	10K	5%	1/4W	
R35	1-249-425-11	CARBON	4.7K	5%	1/4W	
R36	1-249-433-11	CARBON	22K	5%	1/4W	
R37	1-249-429-11	CARBON	10K	5%	1/4W	
R38	1-249-423-11	CARBON	3.3K	5%	1/4W	
R39	1-247-887-00	CARBON	220K	5%	1/4W	
R40	1-249-435-11	CARBON	33K	5%	1/4W	
R41	1-249-435-11	CARBON	33K	5%	1/4W	
R42	1-249-425-11	CARBON	4.7K	5%	1/4W	
☒R43	⚠	METAL			1/6W	
R44	1-215-459-00	METAL	39K	1%	1/6W	
R45	1-247-887-00	CARBON	220K	5%	1/4W	
R46	⚠1-214-888-91	METAL	10K	1%	1/2W	
R47	⚠1-214-899-91	METAL	27K	1%	1/2W	
R48	⚠1-214-899-91	METAL	27K	1%	1/2W	
R49	⚠1-214-897-91	METAL	22K	1%	1/2W	
R50	⚠1-214-897-91	METAL	22K	1%	1/2W	
R51	1-249-397-11	CARBON	22	5%	1/4W	
R52	1-215-926-00	METAL OXIDE	33K	5%	3W	F
R53	1-249-417-11	CARBON	1K	5%	1/4W	
R54	1-249-425-11	CARBON	4.7K	5%	1/4W	
R55	1-249-410-11	CARBON	270	5%	1/4W	
R56	1-249-427-11	CARBON	6.8K	5%	1/4W	
R57	1-249-423-11	CARBON	3.3K	5%	1/4W	
R58	1-249-434-11	CARBON	27K	5%	1/4W	
R59	1-215-882-00	METAL OXIDE	22	5%	2W	F
R60	1-215-868-00	METAL OXIDE	680	5%	1W	F
R63	⚠1-249-421-51	CARBON	2.2K	5%	1/4W	F
R64	1-249-405-11	CARBON	100	5%	1/4W	F
R65	1-215-923-00	METAL OXIDE	10K	5%	3W	F
R66	1-249-404-00	CARBON	82	5%	1/4W	
R67	1-249-397-11	CARBON	22	5%	1/4W	F
R68	1-214-876-00	METAL	3.3K	1%	1/2W	
R69	1-214-872-00	METAL	2.2K	1%	1/2W	
R70	1-214-925-00	METAL	330K	1%	1/2W	
R71	1-249-417-11	CARBON	1K	5%	1/4W	
R72	1-249-441-11	CARBON	100K	5%	1/4W	
R73	1-249-441-11	CARBON	100K	5%	1/4W	
R74	1-216-369-00	METAL OXIDE	1	5%	2W	F
R75	1-216-369-00	METAL OXIDE	1	5%	2W	F
R76	1-249-405-11	CARBON	100	5%	1/4W	
R77	1-214-923-00	METAL	270K	1%	1/2W	
R78	1-249-414-11	CARBON	560	5%	1/4W	
R79	1-215-904-11	METAL OXIDE	100K	5%	2W	F
R80	1-202-824-00	SOLID	3.3K	10%	1/2W	
R81	1-249-412-11	CARBON	390	5%	1/4W	
☒R82	⚠	CARBON			1/4W	
☒R83	⚠	CARBON			1/4W	
☒R84	⚠	CARBON			1/4W	
☒R85	⚠	CARBON			1/4W	
R86	1-249-429-11	CARBON	10K	5%	1/4W	
R87	1-249-425-11	CARBON	4.7K	5%	1/4W	
R88	1-249-429-11	CARBON	10K	5%	1/4W	
R89	1-215-459-00	METAL	39K	1%	1/6W	
R90	1-215-435-00	METAL	3.9K	1%	1/6W	
R91	1-216-374-00	METAL OXIDE	2.7	5%	2W	F
R92	1-216-372-11	METAL OXIDE	1.8	5%	2W	F
R93	1-202-842-11	SOLID	220K	10%	1/2W	
R94	1-202-842-11	SOLID	220K	10%	1/2W	
R95	1-202-842-11	SOLID	220K	10%	1/2W	
R96	1-202-842-11	SOLID	220K	10%	1/2W	
R97	1-202-842-11	SOLID	220K	10%	1/2W	
R98	1-202-842-11	SOLID	220K	10%	1/2W	
R99	1-202-842-11	SOLID	220K	10%	1/2W	
R100	1-202-842-11	SOLID	220K	10%	1/2W	
R101	1-215-906-11	METAL OXIDE	15	5%	3W	F
R102	1-216-400-11	METAL OXIDE	8.2	5%	3W	F
R103	1-249-433-11	CARBON	22K	5%	1/4W	F
R104	1-246-531-00	CARBON	270K	5%	1/4W	
R105	1-249-421-11	CARBON	2.2K	5%	1/4W	F

TRANSFORMER

Ref.No.	Part No.	Description	Remark
T1	⚠1-437-133-11	TRANSFORMER, FERRITE (HDT)	
T2	⚠1-437-133-11	TRANSFORMER, FERRITE (HDT)	
T3	⚠1-439-320-12	TRANSFORMER, FERRITE (HOT)	

- The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

K X Y

*1-617-560-21 K BOARD
****

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-124-462-00	ELECT	10MF	20%	16V	
C2	1-124-462-00	ELECT	10MF	20%	16V	
C3	1-124-462-00	ELECT	10MF	20%	16V	
C4	1-124-462-00	ELECT	10MF	20%	16V	
C5	1-124-245-00	ELECT	4.7MF	20%	25V	
C6	1-123-622-00	ELECT	22MF	20%	16V	
C7	1-124-236-00	ELECT	47MF	20%	16V	
C8	1-124-247-00	ELECT	10MF	20%	35V	
C9	1-123-333-00	ELECT	100MF	20%	16V	
C10	1-124-236-00	ELECT	47MF	20%	16V	
C11	1-123-323-00	ELECT	470MF	20%	16V	
C12	1-123-323-00	ELECT	470MF	20%	16V	
C13	1-136-169-00	FILM	0.22MF	5%	50V	
C14	1-123-333-00	ELECT	100MF	20%	25V	
C15	1-136-169-00	FILM	0.22MF	5%	50V	
C16	1-101-004-00	CERAMIC	0.01MF		50V	
C17	1-124-598-11	ELECT	22MF	20%	25V	

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-101-50	DIODE RD5.1E-L2	
D2	8-719-911-19	DIODE 1SS119	
D3	8-719-911-19	DIODE 1SS119	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-145-58	IC UPC4558C	
IC2	8-759-602-40	IC M5222L	
IC3	⚠ 8-759-101-77	IC UPC1241H	

CONNECTOR

Ref.No.	Part No.	Description	Remark
K1	*1-566-055-11	PIN, CONNECTOR 3P	
K2	*1-566-055-11	PIN, CONNECTOR 3P	
K3	*1-566-056-11	PIN, CONNECTOR 4P	
K4	*1-566-055-11	PIN, CONNECTOR 3P	
K5	*1-566-055-11	PIN, CONNECTOR 3P	
K6	*1-566-055-11	PIN, CONNECTOR 3P	
K7	*1-566-055-11	PIN, CONNECTOR 3P	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-178-54	TRANSISTOR 2SC2785	
Q2	8-729-178-54	TRANSISTOR 2SC2785	
Q3	8-729-178-54	TRANSISTOR 2SC2785	
Q4	8-729-117-54	TRANSISTOR 2SA1175	
Q5	8-729-117-54	TRANSISTOR 2SA1175	
Q6	8-729-103-43	TRANSISTOR 2SB734	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-405-11	CARBON	100	5%	1/4W	
R2	1-249-422-11	CARBON	2.7K	5%	1/4W	
R3	1-249-429-11	CARBON	10K	5%	1/4W	
R4	1-249-432-11	CARBON	18K	5%	1/4W	
R5	1-215-434-00	METAL	3.6K	1%	1/6W	
R6	1-249-435-11	CARBON	33K	5%	1/4W	
R7	1-249-405-11	CARBON	100	5%	1/4W	
R8	1-249-421-11	CARBON	2.2K	5%	1/4W	
R9	1-249-437-11	CARBON	47K	5%	1/4W	
R10	1-249-408-11	CARBON	180	5%	1/4W	
R11	1-249-407-11	CARBON	150	5%	1/4W	
R12	1-249-435-11	CARBON	33K	5%	1/4W	
R13	1-249-422-11	CARBON	2.7K	5%	1/4W	
R14	1-249-421-11	CARBON	2.2K	5%	1/4W	
R15	1-249-421-11	CARBON	2.2K	5%	1/4W	
R16	1-249-414-11	CARBON	560	5%	1/4W	
R17	1-249-421-11	CARBON	2.2K	5%	1/4W	
R18	⚠ 1-246-401-85	CARBON	1	5%	1/4W	
R19	1-249-427-11	CARBON	6.8K	5%	1/4W	
R20	1-249-429-11	CARBON	10K	5%	1/4W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV1	1-230-630-11	RES, ADJ, CARBON 10K	

****

*1-617-563-21 X BOARD
****

TERMINAL

Ref.No.	Part No.	Description	Remark
PL1	*1-535-615-11	TERMINAL (LAMP SOCKET)	

CONNECTOR

Ref.No.	Part No.	Description	Remark
X1	*1-566-041-11	PIN, CONNECTOR 2P	
X2	*1-566-041-11	PIN, CONNECTOR 2P	

****

*1-617-564-21 Y BOARD
****

*4-365-850-00 HOLDER, LED

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-904-92	DIODE GL-9HY2	
D2	8-719-909-20	DIODE GL-9NG2	

CONNECTOR

Ref.No.	Part No.	Description	Remark
Y1	*1-566-042-11	PIN, CONNECTOR 3P	

****

MISCELLANEOUS
****

Ref.No.	Part No.	Description			Remark
	1-202-723-00	RES, SOLID 2.2M	10%	1/2W	
	⚠ 1-230-089-22	RESISTOR ASSY, HIGH-VOLTAGE			

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
	⚠1-451-283-11	DEFLECTION YOKE (SY-130M)	
	⚠1-452-261-41	CRT NECK ASSY (362)	
	⚠1-452-302-31	CRT NECK ASSEMBLY	
	⚠1-509-547-11	3P INLET	
	1-518-590-11	LAMP, PILOT (WITH HOLDER)	
	1-519-063-XX	DISCHARGING GAP	
	1-543-179-00	CORE, RING	
	⚠1-554-913-11	SWITCH, SLIDE (VOLTAGE CHANGE)	
	1-556-880-51	LEAD ASSY, HIGH-VOLTAGE	
	1-556-880-81	LEAD ASSY, HIGH-VOLTAGE	
	⚠1-558-365-11	CONNECTOR ASSY, ROUND TYPE 14P	
	⚠8-733-022-05	PICTURE TUBE (SD-187(B))	
	⚠8-736-051-05	PICTURE TUBE (SD-130(G))	
	⚠8-736-053-05	PICTURE TUBE (SD-130(R))	
FAN1	⚠1-541-324-11	FAN, DC	
FAN2	⚠1-541-324-11	FAN, DC	
Q1	8-729-311-42	TRANSISTOR 2SC1114	
Q2	⚠8-729-302-02	TRANSISTOR 2SD905	
Q3	8-729-311-62	TRANSISTOR 2SC1116	
Q4	8-729-311-62	TRANSISTOR 2SC1116	
Q5	⚠8-729-302-02	TRANSISTOR 2SD905	
R901	⚠1-217-183-11	RES, WIREWOUND 2.7 10%	15W
S2	⚠1-552-437-11	SWITCH, LEVER	
S3	⚠1-570-258-32	SWITCH, THERMAL REED	
S902	⚠1-570-052-12	SWITCH, PUSH (AC POWER)(1 KEY)	
SP1	1-503-344-21	SPEAKER	
SP2	1-503-344-21	SPEAKER	
T901	⚠1-453-095-15	DC BLOCK, HIGH-VOLTAGE (F.B.T)	

* * *

ACCESSORIES AND PACKING MATERIALS

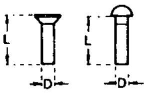
Part No.	Description	Remark
⚠1-556-760-11	CORD, POWER (3 CORE)	
*4-310-638-00	BAG, PROTECTION	
4-378-601-01	SPACER (72"), CRT	
4-378-625-01	LABEL, REMOTE CONTROL	
*4-378-674-01	CUSHION (UPPER) (ASSY)	
*4-378-681-01	CUSHION (LOWER) (ASSY)	
*4-378-685-01	SPACER (200")	
*4-378-686-01	SPACER (200"), CRT	
*4-383-098-01	SPACER	
*4-387-701-01	INDIVIDUAL CARTON	
4-482-486-11	MANUAL, INSTRUCTION	
4-490-302-11	INSTRUCTION	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

HARDWARE NOMENCLATURE

Screw: – P 3 x 10

- L: *Length in mm*
- D: *Diameter in mm*
- *Type of head*
- *Indicated slotted-head only.*
Unless otherwise indicated, it means
cross-recessed head (Phillips type).

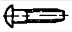
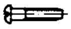
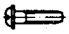
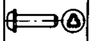
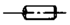
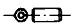
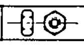
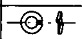


Nut, Washer, Retaining ring:

N 3

- *Diameter of usable screw or shaft*
- *Reference designation*

Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazier-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	

©1 987.9

Modifikation VPH-1031QM auf IBM-PS/2 Modus 4

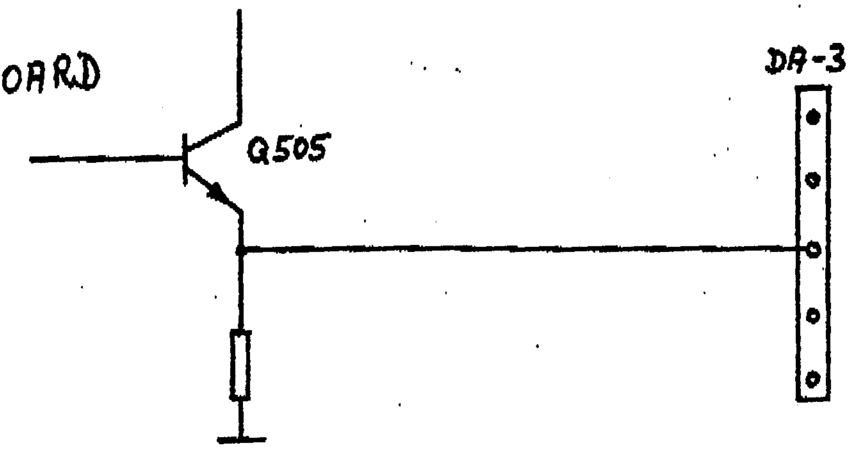
Um den Großbildprojektor VPH-1031QM im Modus 4 einwandfrei betreiben zu können (alle Zeichen darzustellen), muß nachfolgende Modifikation durchgeführt werden.

Trennen Sie die Verbindung vom Emitter Q505 zum Anschluß 3 des DA-3 Steckers auf (siehe Schaltung Punkt 1) und fügen Sie die unter Punkt 2 dargestellte Schaltung in die Verbindung ein (Aufbau der Zusatzschaltung auf einer Lochrasterplatine).

Führen Sie nach Installation des Zusatzboardes folgenden Nachgleich durch:

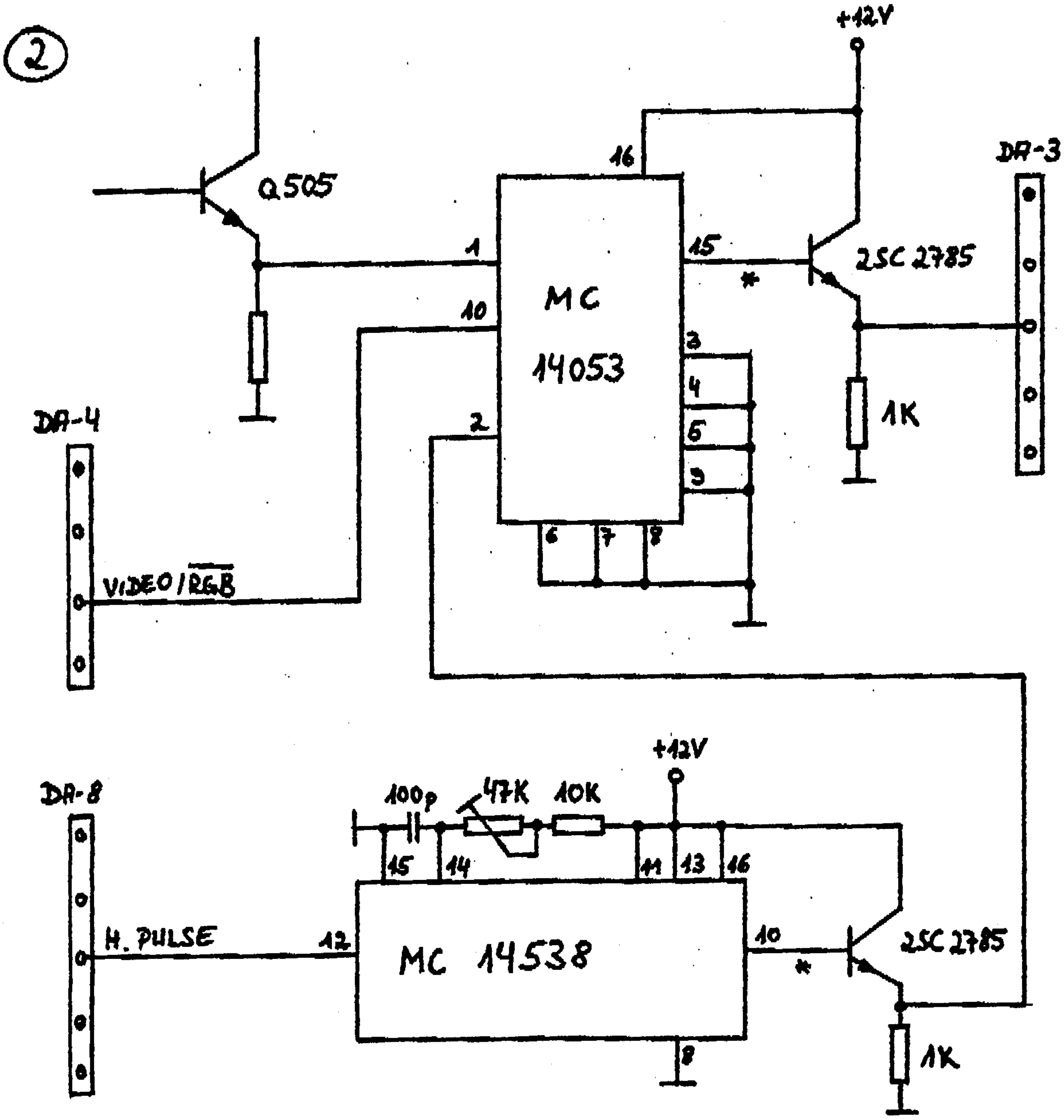
1. Speisen Sie ein Signal im IBM-PS/2 Modus 4 ein.
2. Drehen Sie den H-Shift-Regler auf Linksanschlag. (Das Bild sollte vollständig sichtbar sein.)
3. Stellen Sie den Regler auf der Modifikationsplatine so ein, daß der linke Rand des Bildes vollständig dargestellt wird, d.h. nicht begrenzt wird.
4. Schalten Sie zwischen Anschluß 1 von IC1 auf dem DA-Board und Masse einen Kondensator 10uF/16V zu.
5. Speisen Sie ein Signal mit einer Horizontalfrequenz von 30 - 32kHz ein und stellen Sie RV2 auf dem DA-Board so ein, daß das Bild synchronisiert.
6. Speisen Sie ein Signal (RGB) mit einer Horizontalfrequenz von 15kHz ein und stellen Sie RV1 auf dem DA-Board so ein, daß das Bild synchronisiert.
7. Führen Sie die Abgleiche unter Punkt 5 + 6 mehrmals durch.
8. Entfernen Sie den unter Punkt 4 eingebauten Kondensator.

① DA-BOARD



Q505
DA-3

②



+12V
16
Q505
1
10
MC 14053
15
*
2SC 2785
DA-3
2
4
5
9
6
7
8
1K
DA-4
VIDEO/$\overline{\text{RGB}}$
DA-8
100p
47K
10K
+12V
15
14
11
13
16
H. PULSE
12
MC 14538
10
*
2SC 2785
1K
8